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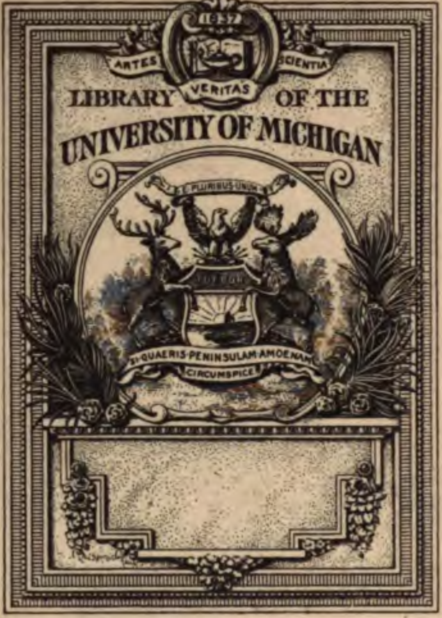

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RETROSPECT

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OF

PRACTICAL MEDICINE AND SURGERY,

BEING

A Half-Yearly Journal,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL
IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE, M. D.,

LATE LECTURER ON MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN
AT THE LEEDS SCHOOL OF MEDICINE, ETC.,

AND

JAMES BRAITHWAITE, M. D., LOND.

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PRACTICAL MEDICINE,

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

1.—ZYMOTIC DISEASES AS MORE ESPECIALLY ILLUSTRATED BY PUERPERAL FEVER.

By Dr. Evory Kennedy, ex-Master of the Dublin Lying-in Hospital, and ex-President of the College of Physicians in Ireland.

[Puerperal fever is par-excellence a zymotic disease. There is a well established connection between the prevalence of puerperal fever and that of general epidemics of other zymotic diseases. So frequently has the metria shown itself in the Lying-in Hospital of Dublin, and in the city generally, when continued fever, typhus, or erysipelas were prevalent in the medical and surgical hospitals, that they are generally considered as standing in the relation of cause and effect.]

The difficulties that beset medical men in investigating the epidemic and contagious nature of puerperal fever were simply expressed by the late Dr. Collins; when after detailing its prevalence in the early years of his mastership of the Lying-in Hospital, and the success of the steps taken by him to lessen it, he adds—"The facts here detailed are strongly calculated not only to lead us to suspect, but even prove that this fever derived its origin from some local cause, and not from anything noxious in the atmosphere. To this I should assent," he continues, "had we not proof equally well authenticated, of its prevalence and fatality in the houses of the affluent, as already stated." If the views we have arrived at, and which we now venture to propound, with regard to the true nature of the poisoning in these cases be correct, then the contagious and sporadic nature of puerperal fever will be perfectly reconcilable. Collins's paragraph, above quoted, contains the gist of the puerperal fever difficulty in a nutshell. Its local cause approaches more nearly to a *constant* quantity in the wards of a crowded Lying-in Hospital; whereas it is only an *occasional* quantity in the houses of the affluent; and the only influence exercised in its production by the atmosphere is, that in certain states of the atmosphere, the constant and occasional quantities become *more operative* or *active* in generating or propagating this dreadful malady—a malady thus zymotic in its type and origin, produced by a poison emanating from parturient women; more active in proportion to the concentration of their excretions or exhalations, and consequently in proportion to their number cohabiting in a given number of feet of atmospheric space; but not requiring more than one parturient female to generate it; when the poison she herself has generated may, as in the case of blood-poisoning, be re-absorbed into her own system, and self-contamination then as certainly strike her down as if a crowded, ill-ventilated lying-in ward was the generating medium. The most striking parallel that we are acquainted with of the generation and development of diseases under similar conditions are, the gaol fever (a disease now fortunately little met with), erysipelas in surgical hospitals, cholera in our camps and overcrowded human gatherings, and tuberculosis as observed among the poor work-people in Paris, and other crowded cities, a fact that has given rise to the idea that phthisis should also be classed with zymotic diseases. In Paris, for instance, where this *disease prevails so largely* among the "ouvriers," it is calculated that 40,000 live huddled together in "chambres garnies," or furnished apartments, containing from eight to ten beds in each. The confining apes in close ill-ventilated menageries generates tuberculosis in these animals, apparently from similar causes; and glanders, a purely zymotic disease, produced by crowding horses together in ill-ventilated stables, furnishes us with a further example. Of the parallel with erysipelas, pyemia, hospital gangrene, and what we might term generally "hospital malaria," we shall have occasion to treat more at large when alluding to traumatic metria.

In distinguishing between puerperal fever or metria and its congeners, it will be unnecessary to my present practical audience to dwell upon afterpains, hysteralgia, or what I used to denominate to my class peritondynia or gastralgia; but peritonitis and metritis may require a passing notice. Such cases, in the pure form, as we see them occur unconnected with deliveries, are occasionally to be met with, and may be known as partaking more of the character of local inflammation without zymotic indications. These are the cases that will bear depletion best, and the use of the lancet is too much neglected in them. Twelve to eighteen ounces of blood extracted from the arm, followed by eighteen or two dozen of leeches, will often relieve and subdue all inflammatory symptom, and the pulse that was hard, contracted, and compressed, will, as in ordinary peritonitis, rise to a more rounded resistance under this treatment.

The distinction I should draw between this form of disease and true metria, is that in the latter there are the characteristics of blood-poisoning, the shrunken features, the depression, the unmistakable expression of countenance that the practical obstetrician cannot be deceived in.

In true puerperal fever of the present day the use of the lancet is rarely admissible; local depletion must be our sheet anchor. But in having recourse to it the secret of success is to reduce the pain by repetition of leeching before reaction has had time to establish itself.

The physician should see his patient every six or eight hours after the first attack; and if he find that his first leeching has not enabled the patient to bear pressure and relieved her from pain, he should at once apply more leeches before reaction is established, and so on as long as the pulse will indicate the propriety of further abstraction of blood.

Allowing, according to circumstances, a longer interval between each leeching as he finds the necessity become less urgent or the state of the circulation less indicate its propriety. A neglect of attention to this rule has often, to my own knowledge, caused patients to be snatched away by this fatal disease, who, in the hands of less hesitating or more energetic practitioners, might have been fairly reckoned upon as surviving. I know no more harassing trial to the consultant, in these cases, than to have been called into and assisted in subduing the acute symptoms by prompt and energetic treatment, and then, when matters have improved, to be relieved from attendance under the impression that the danger was over, only to be recalled to see the patient, perhaps, forty-eight hours later, beyond the reach of treatment, from the inflammation having been again allowed to creep on to an impending fatal issue. This has occurred so frequently in my own case, that it left me in doubt whether, for my peace of mind, I should not refuse altogether to see such cases in consultation. Let my younger, and indeed my older, hearers be advised by me, whenever they think it necessary to divide the responsibility in such cases, to make the consultant sustain his share of it, until *he* pronounces the case out of danger. This is only fair by the physician in attendance, as well as by consultant, as a contrary practice is sure to recoil upon the ordinary attendant, in case of a casualty. Another practical hint I would wish to impress upon my hearers is, as to the use of mercury in these cases. There is no doubt of its efficacy if you can produce its specific effects; but, in the worst cases, there is not time for this, and indeed the system seems to be insusceptible.

When peritonitis or metria were to be anticipated, as when the disease was prevalent, after manual interference, in labour, or for the removal of the placenta, my habit was, to commence at once after the labour was completed, with small and frequently-repeated doses of mercury, say a grain or half a grain of grey powder every third or fourth hour, and even applying in more suspicious cases mercurial ointment to the arm-pits and groins. By these means, without disturbing the patient's system to any serious extent, in the course of forty-eight or fifty-six hours a slight mercurialization may be perceptible, often before the time at which the disease could grapple the patient; and then, should metria or inflammatory symptoms show themselves, by pressing mercurials a little more freely the system may speedily be brought under its specific influence, and the disease be thus easily checked if it had not already been prevented. I have only on one or two occasions seen puerperal fever prove fatal after mercurialization showed itself, and in them the action was incomplete. But, on the other hand, how often have I seen mercury in every dose fail in producing the slightest approach to its specific effects? I fear the answer to this question would exhibit a fearful array of baffled remedial efforts. I may mention, however, as apparently contradictory to this view a case that occurred under my care, in the Lying-in Hospital, of a woman who came in under the influence of mercury, which she stated she had taken only to the extent of three pills, as what she termed "sweetners;" and yet this woman was attacked with metria on the third day, and the attack proved fatal. Whether this was due to the fact that speedy ptyalism is not always a proof of constitutional mercurialization or to the failure of the prophylactic, my hearers may be the best judges.

In dealing with metria, the two-handed treatment, that of relieving local inflammation, whilst we support the constitutional powers—the strength and the circulation, by administering food easily and rapidly assimilated into the circulation, are the two chief indications, the latter just as essential as the former; and, in the true *metria*, or well-marked zymotic puerperal fever, by much the most important of the two. It must never be forgotten that the zymotic metria, *especially*, as we see it in hospital, is a *poison fever;* and no matter how severely it sets in with local distress and anorexia, that it is essentially a disease of debility, passing more or less rapidly into a state of collapse; consequently, that however depletory our treatment may be to check or restrain local distress and lesions, we must look steadily forward and provide for the coming issue—collapse and sinking from exhaustion. Our treatment must, therefore, be directed to that, and nutritious broths, jellies, milk, and farinaceous food should be as freely given as possible, compatible with their being retained on the stomach. The same observations apply to stimulants, but they require more judgment in their administration, and, as a general rule, must be given as we observe their effects to be satisfactory.

On the whole, however, I have little doubt that they are given too *sparingly* and delayed too *long* in their administration—delayed, in fact, until the patient is absolutely sinking, when the stomach will not retain them and they produce no reaction. There is, however, a form of this disease which I ventured to describe many years ago, in which the symptoms of marked collapse and exhaustion set in early, accompanied with tympanitis, showing an exaggerated train of symptoms from the very commencement—countenance sunken; pulse small, rapid, and compressible; but this state not always accompanied by a corresponding amount of abdominal pain. I described this form as allied to the class of cases described by Laennec under the term "Factitie Debile." Now, in this case we cannot commence our stimulants too early, and can scarcely administer them too freely. It is incredible the quantity both of stimulants and nutriments that this class of cases will take. It is the form in which turpentine treatment best agrees. It seems to be one in which the intensity of the poisoning and the extent of the inflammatory lesions bear no relative proportion, or rather are often to be found in an inverse ratio, *post mortem* examination showing in them only slight effusion; sometimes merely a gelatinous effusion behind the peritoneum in the cellular tissue; perhaps only a large flabby uterus, with intense tympanitic distension, and often little or no effusion in the abdomen, pleura, or other cavities, nor any lesion of veins or uterus.

I recollect a case of this kind, attended about three years since, in consultation with the late Dr. Hardy and Dr. Mitchell. We left the house on three occasions, scarcely deeming it necessary to make a fresh appointment, the patient's dissolution appeared so imminent; and yet she recovered perfectly and speedily, and with little or no resulting inconvenience, and is now a strong, healthy lady. In this case the lady consumed two bottles of wine, a quart of beef-tea, and a pint of brandy in twenty-four hours.

In describing the varieties assumed by metria, we would denominate one what we should term traumatic metria, or that occurring as the result of injuries, operations, and lesions of any kind during the delivery. In this way, when zymotic metria prevails in hospital or in private, we know that operations or lesions that could at other times be calculated upon, as productive of little or no inconvenience, almost doom our patients either to fatal or alarming illness. The use of the forceps, of the crotchet, rupture of the perineum, abrasions, slight lacerations or injuries in the vagina, nay, even the use of the lancet in venesection, are thus followed by metria, often of the most indomitable character. In fact, the air of the maternity becomes charged with a poison, in many respects similar to what we observe in our surgical and military hospitals. In this way erysipelas, pyemia, arthritis, diffuse inflammation, phagedena, or hospital gangrene, run their course of havoc, exactly as in the operation wards of surgical institutions. The year 1838 was replete in the Dublin Lying-in Hospital with these traumatic cases. I drew the attention of the British Medical Association to some of their varieties at their meeting in Dublin in 1867, and showed drawings made at the time by Kirwan, Conoly, and myself. I shall here give a case of traumatic puerperal gangrene, combined with cerebro-spinal symptoms and purpuric discolorations that occurred in that epidemic:—

Margaret M'Gouran, aged 32, who was doing well for two days after her delivery with the forceps, in consequence of tedious labour, was attacked on the morning of the 2nd of March, 1838, by cerebral symptoms, with rapid pulse and slight abdominal tenderness. Her excitement was so great that she became unmanageable, and was obliged to be restrained in bed. She complained incessantly of pains in her legs. The whole surface of the body, but more especially the face and lower extremities, became livid. Large blue-colored bullæ, or vesicles, appeared on different parts on the lower extremities. The excitement subsided in a few hours into a state of depression, and she sank at noon on the 3rd, about twenty-eight hours from the commencement of the attack. Only an abdominal examination could be obtained of this case, when a small quantity of bloody serum was found in the peritoneal cavity, and some sloughing in the vagina. The subcutaneous cellular tissue of the body was the seat of congestive infiltration. This was particularly evident when a section of the adipose wall of the abdomen was made, and the left lower extremity was livid.

The black serum brings to recollection my old friend Dr. Alison's case of the black fluid in the blistered vesicles.

Those who have had an opportunity of seeing this class of case will bring to mind that in arthritic metria the joints are generally secondarily affected, and that at intervals of several days, nay, often of weeks, after the peritonitis or metritis has run its course. It was not so in several of those which I might term thundering cases of arthritis that occurred in 1838. On the contrary, the joints were the first organs attacked, and the knee, the elbow, the ankle, the wrist, but above and the most violent of all, the sacro-iliac synchondrosis, assumed in turn the lead, as the structure attacked. In some there occurred erysipelatous inflammation of the buttock. The torture attending these arthritic forms is extreme in all cases, but in that where the synchondrosis was engaged it was absolutely intolerable. The fullest opiates failed to afford relief, and violent as was the outburst, and extensive as was the structure engaged, although some of them proved rapidly fatal, others yielded to treatment; but only to that of the most prompt and decided kind; namely, the application of superficial caustics and escharotics, but chiefly to *the free use* of the actual cautery. Those cases in which lesions occurred *in labour, as lacerations of the* perineum, were attacked with hospital gangrene, when the free use of caustics and mineral acids, with chloride of soda lotion and antiseptic poultices, were useful. Erysipelatous inflammation of the buttock proceeded in more than one case to gangrenous sloughing, and in another of this kind, although the ankle and knee were both extensively engaged, the woman recovered.

Bold incisions were made in some of these cases, under the advice of the late able and distinguished surgeon Abraham Colles; but the result was not satisfactory, and uncontrollable hemorrhage even followed their use.

The last variation of type, observed as a genus, of the general family of metria, to which I shall direct your attention, is what I designated in a paper read at the meeting of the British Medical Association, "Puerperal Purpuric Fever." I described it as a disease of peculiar malignity, that appeared in an endemic attacking the patients in the Lying-in Hospital, in December, 1837, then under my care, and which carried off thirty-five patients between that month and the month of April, 1838.

In a certain proportion of those attacked, symptoms exhibited themselves unlike what had hitherto been observed in metria. Those symptoms corresponded in their characteristics with what Dr. Marston clearly described in his two classes of the disease so unfortunately denominated the "Black Death," and which attracted so much attention two years ago in this country, —Firstly, those expressive, as he justly terms it, of profound blood poisoning; second, those of cerebro-spinal irritation.—*Dublin Quarterly Journal, May*, 1869, *p.* 269.

2.—A CASE ILLUSTRATING THE EFFECT OF QUININE IN TYPHUS FEVER.

By Dr. H. Thompson, Surgeon to the County Tyrone Infirmary.

On the 23rd of April ultimo, I was sent for to see the physician of a workhouse, twenty miles from here, and found him in typhus fever, which had commenced with a day of well-marked rigors four days before.

The disease was characterized by an unusual amount of prostration, coolness of surface and feebleness of pulse, not generally found at so early a stage. His pulse was 120, and there was an eruption of maculæ over trunk and extremities, without any petechial admixture. He had a peculiarly heavy look in his eye, and complained of headache. His intelligence was perfect, and he distinctly attributed the attack to contagion. He had taken some aperient medicine when he found himself ill, which had cleared out his bowels. He was habitually temperate and abstemious, aged 30, not a very strong constitution, and had as yet taken no stimulants, fearing to increase his headache.

In consultation with his local medical friend, the case was recognized as likely to be a severe one, and it was decided to have his head shaved; cold cloths kept applied; a hot jar to his feet; a citrate of ammonia mixture, every fourth hour; beef-tea and milk *ad libitum*, and two glasses of sherry, or one of brandy, largely diluted, to be used as drink from time to time.

April 25th. Heart's impulse weaker; want of sleep and some tendency to delirium; no complaint made of the head, so it was not inquired about. Ordered:

Half an ounce of brandy in water every second hour.
Chloroform gtts. x.; liq. opii. sed. (Battly), gtts. xv.; mist, camphoræ, ℥ ss. M. F. haust. h. s.

26th.—Slept five hours at intervals; one sleep lasted two hours; pulse 110; very feeble; skin much warmer; wanders a little, but knows every one; bowels confined last two days. Ordered:

Enema saponis.
Continue nourishment as before.
Brandy, four glasses daily,

28th. Scarcely holds his ground; the maculæ have come out abundantly, and preserve a good colour. He is intelligent, though wandering when left to himself; sleeps sufficiently without medicinal aid; bowels open and conscious of his evacuations; respiration 40: pulse 130, and very weak. His father a medical practitioner of great experience, and his local medical friend, concurred with me in forming a very unfavourable opinion; we all looked upon the case as one that would not terminate, in the most favourable event, before the close of the third week, and we felt, considering the small effect of the large quantity of stimulants and nutriment he was consuming, that it was hardly possible he could hold out for that time.

On my way home, anxiously considering the case with these impressions, I asked myself, "Can nothing be done to cut it short? for if it goes on, he cannot hold out," and at the same moment the idea of quinine came into my head; so I wrote back by the guard of the next train suggesting the addition of three grains to each dose of citrate of ammonia mixture; this was commenced the same night at about twelve o'clock, and he got six grains. After the second dose the gentleman in attendance thought he perceived such a change, that he was afraid to continue the quinine; the patient's eye assumed a wild restless expression. He expressed a conviction that he was about to die, called his family about him, and bade them adieu, in perfectly intelligent and affecting terms. His sister, however, plied him well with brandy, which she had previously been permitted to use without limit, and when the *scene* was over he became quieter. An enema of port and beef-tea was also given, which with his urine, he passed unconsciously, but he slept at intervals, and perspired slightly; this was early in the morning of the eleventh day from the rigor.

April 30th. At 9.30 a.m., I found his pulse improved, fuller and stronger, and 120; respiration 48; skin warm and moist, it might even be called hot; his intelligence was not much impaired when roused, but prostration so extreme that he lay like a log, scarcely able to move a finger; his tongue was black and dry, and his bed a mass of filth, both urine and fæces having been passed under him; in fact, they all thought that he had but a few hours to live, and that there was little use in tormenting him any further. I took quite a different view, however, and, having got a clean fresh bed placed beside that on which he lay, I threw off the bed-clothes and washed his whole body over with tepid vinegar and water, cleansing every part thoroughly, and drying it as it was wet.

He was then lifted into the clean bed; and, though his body was limp and flaccid as if he were dead, as soon as he was in the clean sheets, he looked up, recognized me with a smile, and muttered, "I liked that kicking about." I had previously given him five grains of quinine in a half a glass of brandy, pure; I ordered it to be repeated every third hour, with beef-tea and milk *ad libitum;* before I left the house at twelve o'clock he had fallen asleep, and his skin had become hot and moist.

May 1st, 4.45 p.m. When I left him at twelve yesterday, he was prostrate and powerless as a dead body, and he was breathing 48 in the minute, with pulse 120; perspiring slightly. Since then, he had got five grains of quinine every third hour in sherry, and as much brandy and beef-tea as he could be induced to swallow. Altogether, in about thirty hours, he had taken sixty grains of quinine, and about a bottle and a half of brandy. On this evening I found him lying quietly in a light doze; breathing 24; pulse 100; skin cool, and extremities rather inclined to be cold. Instead of a prostrate condition of the muscular system, there was rather rigidity and a tendency to be troublesome, so that for some hours it had been difficult to get him to open his mouth to let in the food and medicine. When I offered it to him he seemed to wish to comply and would slightly separate his teeth. When awake he would also kick off the bed-clothes and try to get out of bed, showing a complete restoration of muscular power, which rendered it rather difficult to restrain or control him. While I was present he woke up, stared wildly about, tossed off the bed-clothes, and then shouted out in a loud voice and with grimaces, which would have been ludicrous under other circumstances, "Oh my belly's sore," lengthening out the last word into a prolonged shout, and repeating it several times, at the same time pressing his hands on his sides and forcing as if he wanted to empty his bowels. An enema of turpentine, oil, and assafetida was suggested, but rejected with indignation; then a draught of castor oil, and tincture of senna was offered, which he seized with avidity and swallowed at a gulp, though previously he had obstinately clenched his teeth and made a difficulty of letting anything pass them. It was, however, evident that it did not now so much matter; a portion of the poison had been eliminated sufficient to admit of the return of his nervous and muscular power, and instead of prostration there was now rather wild vigilant excitement, obstinacy of will, and considerable muscular energy, amounting to rigidity in the maxillary muscles, and altogether partaking somewhat of the character of cerebro-spinal irritation. I, therefore, brushed some blistering liquid over the nape of his neck, and ordered a draught containing half a grain of muriate of morphia, directing the quinine to be continued in two gr. doses. I left him at midnight, having had him removed into a clean bed, in which he was sleeping tranquilly.

May 2nd. Received the following report from his sister:—He lies quietly, sleeping and taking his nourishment with appetite; eye and voice rather excited; mouth a little dry; bowels were moved by the castor oil; was inclined to ask questions, but on being told you did not wish him to talk, turned on his side and went to sleep. His father came to see him, and was gratified and surprised to see him so strong; does not care much for beef-tea, though he takes plenty; likes his milk, and asks for it.

May 3rd, 4.45 p.m. Sleeping tranquilly when I arrived; soon after awoke quite himself, shook me warmly by the hand, and began to make a speech, which I put a sudden stop to.

I need not go on detailing a steady progress to recovery, which went on uninterruptedly from this forward.

I give this case for what it may be considered worth, and should not have thought of publishing it had I not been asked to do so; whether the marked change which took place after the exhibition of the quinine were a case of propter or post—every one must determine for himself. The prominent points seem to lead to the former conclusion, for the following reasons:—

In a case of maculated typhus characterized by profound depression of vital power, and considered hopeless by three men of large experience, unless some change could be effected by treatment, a measure rather unusual was adopted, with the expressed intention of producing the change so much desired, and was followed by effects so marked as to call for the discontinuance of the remedy in the mind of one of the attendants.

The improvement effected was not, however, interfered with by the temporary omission of the medicine; but, on its being resumed a few hours after in larger doses, went on until the resolution of the fever, which may be said to have been complete on the second day of the exhibition of the quinine, and on the 13th of the disease, the change having commenced on the 11th, which is not one of those periods commonly regarded as critical in the natural course of the disease.—*Dublin Quarterly Journal, Aug.*, 1869, *p.* 103.

3.—REMARKS ON THE TREATMENT OF ZYMOTIC DISEASES WITH SULPHUROUS ACID.

By Dr. W. Jackson Cummins, Physician to the Cork South Infirmary and County Hospital, &c.

[Dr. Cummins states that he has almost entirely given up the use of the bisulphites as prophylactics since he has tried the much more efficient and practicable mode of introducing sulphur into the system by means of sulphurous acid, made by burning sulphur in the sick room. After relating several cases, he observes:]

The most remarkable effect of the antizymotic treatment was the comparative immunity enjoyed by other members of those households which adopted it, whole families having escaped infection in some instances, and in all, except one, the subsequent cases been much less severe than the first.

It may be supposed that the almost continuous smell of sulphurous acid kept up in a respectable house for weeks together would be found intolerable, but such is not the case: if set free in too large a quantity at a time, it of course produces cough, sneezing, &c., &c., but burnt frequently in small quantities, it is not found disagreeable, and from the sense of purity it imparts to the air it is rather pleasing to some people, myself among the number. If I remain long in the sick room when sulphur is burning, I find that it leaves a sweetish taste in my mouth, and invariably gives me a feeling of hunger and extreme relish for food. The nurse of one of my little patients, who being an asthmatic, was apprehensive as to the effect of the fumes upon herself, informed me subsequently that her chest was much better than usual during the time the smell of sulphur was kept up in the house.

I cannot conclude this communication without quoting extensively from a paper on the pathology of cholera by Dr. E. A. Sansom, in the February No. of the Medical Press and Circular, as much of the information there compiled to illustrate the pathology of that disease is applicable to all zymotic diseases, and to the subject before us.

It may seem incredible to a superficial observer that a small portion of sulphurous acid diffused through a sick room could influence the progress of diseases, the outward manifestations of which are often so appalling; but when we consider the extreme minuteness of the molecule, possessed of vital properties, which introduced into the blood multiplies thereon, it becomes more intelligible, thus to quote from Dr. Sansom:—"The investigation of the phenomena of vaccination has shown how almost inconceivably minute are the particles capable of inducing disease. Not only are these said to be, under the highest powers, molecules scarcely visible, but the researches of Chauveau has shown that if vaccine lymph be diluted with 150 times its bulk of matter, and a milligramme of the solution be conveyed on a lancet-point to an animal organism, it is capable of inducing the phenomena of vaccine disease. According to Beale the organised bodies capable of producing cattle plague must be less than 1-50,000th part of an inch in diameter. Analogy, therefore, lends colour to the hypothesis that zymotic matter (and by inclusion cholera matter) is composed of particles at the utmost verge of vision;" and again Dr. Farr, quoted by the same author, says—"The habits of the vibrion, the velocity of its development, and its power of disorganizing other organic forms, are seen under the microscope. If vibrions constituted the cholera ferment, diffusion through water, and to some extent through sewers or air . . . would be perfectly intelligible. Two vibrions would become by fissiparity 4, 8, 16, and at the 100th generation, at this uninterrupted rate, 126,765,000,000,000,000,000,000; and as generations succeed each other by the hour, this accounts for the swarms in every drop of cholera fluid." (Report, cit. p. lxvii.)

Dr. Sansom says further: "If a solution in which spontaneous fermentation has not yet begun be examined under the microscope, besides the organic *debris* nothing can be discovered. Soon, however, appear granules, and afterwards vibrios. It follows that there existed before these vibrios evident to vision, germs of vibrios which were not evident to vision;" and again, "Dujardin discovered fifty species of infusoria during the putrefaction of a single substance. Moreover, the forms presented belong not only to the vegetable, but also to the animal world. Mitscherlich long ago propounded the doctrine that animalculæ were amongst the essential agents of fermentation. It is certain that the development of microzoa accompanies that of microphyta;" but not only are innumerable and low forms of organised beings produced and reproduced from a single parent of inconceivable minuteness, but the pabulum from which such beings are reproduced has an influence on the form and structure of the new beings, for Hallier states "that certain fungi appear in distinct, definite, and unvarying forms, accordingly as they are cultivated in a soil rich in nitrogen or in a soil poor in nitrogen."

In my communication on cholera, I dwelt upon the influence of the pabulum on which the zymotic poison reproduces itself, although unaware at the time that such had actually been demonstrated; and this knowledge makes intelligible the varied type and intensity presented by the same disease in different persons and different epidemics.

It is unnecessary for me to comment upon the bearing of the quotations which I have made upon the antizymotic and antiseptic treatment of the class of diseases, for it must be apparent to all how an agent such as sulphurous acid, which is admitted destructive to low forms of life, can extinguish the germs of disease, and thus become prophylactic, or even curative at the early stages of illness, and of secondary inoculation at later periods.—*Dublin Quarterly Journal, Aug.*, 1869, *p.* 221.

4.—ON THE THERAPEUTICAL VALUE OF THE SULPHITES.

By Dr. J. W. Miller, Dundee.

The researches of Professor Polli on the antiseptic powers of the sulphites have induced many to put these powers to the test in their treatment of disease.

Professor Polli found that the anticatalytic power of sulphurous acid was also possessed by its compounds the sulphites and hyposulphites. He found that these salts could be taken by animals in large doses with impunity. He took some blood from a dog which had been taking the sulphite in its food for some days previously, and exposed it in an open vessel to the air; and at the same time he exposed, in another vessel, some blood taken from a dog which had not had the sulphite; the latter became quite putrid in a few days, while the former remained fresh above three weeks, thus proving the presence of the sulphite in the blood, and its power of resisting putrefaction. In a further stage of his researches, he took two dogs of about the same size, and both apparently in good health; to the one he gave two grammes of sulphite of soda daily, to the other none; otherwise they were treated alike. After five days he injected into the veins of both one gramme of pus from a fœtid abscess. Both dogs suffered severely for about twenty-four hours, but next day were a little better, and took some food. The injection was then repeated to both dogs, the sulphite being continued to the first. Both again suffered for a short time with equal severity, but the dog which had been treated with the sulphite gradually recovered, while the other continued to get worse, and died ten days after the second injection. He made many further experiments on dogs with similar results, varying the nature of the poison injected, employing sometimes pus, sometimes putrid blood, and also the discharge from the nares of a horse affected with glanders.

The results of these experiments are very striking, as showing that the sulphites do possess, in a remarkable degree, the power of opposing the process, or whatever nature that may be, which is set up in the blood by the reception into it of the poison contained in putrescent animal fluids: and it has been argued from these results, that in the sulphites we possess a remedy which should prove of the highest value in the treatment of the whole class of zymotic diseases. These high expectations have not, however, been fully realised in actual practice, and I have thought that it would not be without profit to communicate the issue of a pretty full trial which, when physician to the hospital here, I gave to the sulphites in the treatment of typhus fever.

During the year from June 1865 to June 1866, there were admitted into the hospital 884 cases of typhus. Of these, 161 were treated by the sulphites; sulphite of soda in most of the cases, and latterly sulphite of magnesia. The quantity administered varied from 60 to 240 grains a day—the most usual quantity for adults being from 120 to 180 grains a day.

[The average mortality of the cases treated by sulphites was one in ten, and of those treated in other ways, one in 10·3.]

The total mortality shown is the same in those cases which were treated with the sulphite as in those treated without: and although in the former class the mortality is somewhat smaller among the females, among the males it is somewhat larger: the difference in either case must, therefore, be considered due to some cause apart from the operation of the sulphite. The sulphite seems, therefore, to have produced no effect whatever upon the issue of the cases either favourable or the reverse. Neither, during the progress of those cases which recovered under its employment, was there any amelioration perceptible in the concomitant symptoms and complications; nor, in those cases in which the range of temperature was regularly noted by means of the thermometer, was any effect observable either as regards the degree of elevation of temperature, or the period of the case at which the defervescence was complete.

Lest it may be surmised that in the sixteen fatal cases the employment of the remedy was not commenced sufficiently early, I may state that in eight of them its administration was begun on or before the sixth day (in 1 so early as the third day; in 2 on the fourth day; in 1 on the fifth day; and in 4 on the sixth day).

In addition to these hospital cases, I have tried the sulphite in several cases in private practice, with the same absence of effect. Two of these cases ended fatally, in one of which the sulphite of magnesia was given in half-drachm doses every four hours so early as the third day; in the other it was not commenced till the sixth day.

In a considerable number of cases, especially among the females, the sulphite induced diarrhœa. This inconvenience would be easily obviated, however, were its administration of importance, by combining with each dose a few grains of compound ipecacuanha powder. Sometimes also, but not so frequently, the sulphite provoked vomiting.

If the sulphites possess any curative power whatever when administered after the full development of typhus fever, some manifest difference should have been observable in the course and result of the 161 cases in which they were employed, as compared with the remaining 723; and although the number of cases treated by the sulphites is not very large, I think that the facts elicited are abundantly sufficient to prove the uselessness of annoying such patients with the disagreeable draught, for the taste is sufficiently nauseous.

It should not surprise us, however, in my opinion, that the sulphites have so little, or rather no effect, when administered in a case of typhus, for the conditions differ very much from those in Professor Polli's experiments. In those experiments the blood was first charged with the anticatalytic, and this being done, the virus was then introduced. But in practice, when we wish to employ the sulphite to counteract the fever-poison, we have to meet a very different state of matters. The poison has been received into the blood; the period of incubation is past, during which the poison has been doing its work unopposed, and it has matured into the full development of the fever before the anticatalytic is introduced to counteract the morbid process. In order to render the experiment parallel, the virus should be first injected into the veins, and after the symptoms of septicæmia have developed themselves, the administration of the sulphite should be commenced. On the other hand, to have a case parallel to Prof. Polli's experiments, the sulphite should be given before or immediately after the patient has become infected—a condition which is obviously unattainable. Although useless, therefore, after a fever is fully developed, I believe it to be quite probable that if—in the case of scarlet fever, for example, appearing in one of a crowded family, the other members of which could not be separated from the individual affected—the healthy members were to take the sulphite daily, they would be likely either to escape the disease altogether, or to suffer from it in a mild form; and under such circumstances, I think, it would be very desirable to give the remedy a full trial. It has often occurred to me that an instructive experiment, tending to show whether the sulphite has any value in this direction, could be very easily made by means of vaccination. A few children, about to be vaccinated, might be treated with the sulphite of magnesia for a few days before the performance of the operation, and the trial made, whether, under its influence, the inoculation of the vaccine virus would produce the usual effects.

Having seen the inutility of the sulphites in the treatment of typhus fever, I have not made any trial of them in the treatment of the other exanthemata. There remains, however, a class of diseases in which, I believe, they have been proved to possess great value—I mean, cases of purulent infection, or septicæmia. In midwifery practice, for instance, such cases are common enough. We have cases of abortion, in which the ovum is imperfectly expelled, and in which portions of the placenta are left adherent to the uterus, which shortly become putrid. In such cases the most serious consequences frequently ensue from the absorption into the blood of the putrescent material. In cases of adherent placenta, likewise, at the full term, the same peril is present. Under such circumstances we possess, I believe; in the sulphites a very effectual means of reducing the danger to a minimum. I have had several such opportunities in practice of testing the power of the sulphites, and with the most satisfactory results. One very marked case occurred to me within the last few weeks. After a very protracted and difficult case of labour, in which the child was hydrocephalic, the head requiring to be opened before delivery was effected, the placenta was found to be adherent. It required to be scraped from the uterus over its whole extent by the fingers, and doubtless numerous small fragments were unavoidably left here and there adherent, as was partly proved by the occurrence, a few days later, of considerable hemorrhage, which was arrested by means of ergot. The woman lost much blood before the extraction of the placenta, was much exhausted by the long labour, and the uterus contracted very imperfectly. The discharges soon became putrid, and the patient was just in the condition to favour the absorption of the putrescent fluids by the uterine vessels. I put her at once under treatment by half-drachm doses of the sulphite of magnesia every fourth hour. For a few days she was in a high fever, but nevertheless she made a rapid and complete recovery, and was able to walk out of doors within three weeks after her delivery. Several other similar cases have occurred to me, to give the details of which, however, would be of little use. They were either cases of delivery at the full time, in which, from retention in the uterus of coagula of blood, or of fragments of the placenta, the lochia became putrid; or cases of abortion, in which the placenta came away piecemeal, and in which, under the employment of the sulphite of magnesia, the constitutional symptoms were either slight or entirely absent. To be of any avail, I believe the remedy must be given in considerable doses, from half a drachm to a drachm every fourth or sixth hour, and, still more, that its use must be commenced early in the case, either before or immediately on the appearance of the constitutional symptoms. In one case of abortion in which the sulphite was not given until after the development of symptoms of blood-poisoning, it had not the slightest effect in mitigating the course of the disease, and the case ended fatally.—*Edinburgh Medical Journal, Sept.*, 1869, *p.* 210.

5.—ON THE TREATMENT OF CHOLERA BY INJECTION OF MORPHIA.

By Dr. W. Bates.

[The following is a letter written by Dr. Bates to Mr. Leigh, the Medical Officer of the Manchester Corporation. After giving the address of the patient he continues:]

I saw the case for the first time at 11 o'clock a. m. The first symptoms had commenced seven hours previously by vomiting and purging. When I saw her she was in the *algide stage*—rice-water evacuations from the stomach and bowels, no pulse perceptible at the wrist, voice husky, and the skin had a contracted and pinched appearance throughout its whole extent; skin cold, and expired air cold; thought she must die every minute.

Whatever the poison of cholera may be, a mycoderm or otherwise, such poison produces "tonic" spasm of the involuntary, and "clonic" spasm of the voluntary, muscular tissues. For this spasmodic condition, I have employed the hypodermic administration of morphia.

In my case, on Thursday, I introduced four minims of Robert's solution of morphia over the stomach, and returned to see the effect in an hour afterwards, when I found the abdomen warm, which had been previously cold. I then introduced four more drops, and left the case for three hours, when I found it much improved,—spasm of the involuntary muscles much less, countenance much improved, body warm, pulse quite perceptible at the wrist; vomited once only in four hours; still purged; stomach had begun to retain fluids. At 8 p. m. reaction had fully taken place, and the case has since been treated for one of ordinary diarrhœa.

I think the means used in this case, and the success which has attended it, are worth the attention of the medical profession and the public.

The origin of the poison in this case, on examination, is quite evident. The well from which they are supplied with water, the main sewer for the property, the cesspools and middens, are all in a sandy soil, within three yards of one another.

I last year employed the hypodermic method in the third stage of cholera in the same township to relieve hiccough, sickness, and want of sleep, and found it to relieve hiccough immediately, and produce sleep, with diminution of vomiting.—*Lancet*, *Aug.* 21, 1869, *p.* 282.

6.—ON INDISCRIMINATE STIMULATION IN CHRONIC DISEASE.

By Dr. Francis E. Anstie, Senior Assistant Physician to Westminster Hospital.

It will be well to begin our criticism of stimulation in chronic disease with an enumeration of the undoubted instances in which there is a distinct toleration for large doses of alcohol. 1. There assuredly is a marked tolerance of this kind in many cases of chronic debility which have been induced by one or more copious *hemorrhages*. 2. There is a variety of pulmonary phthisis, especially common in persons with delicate skin and slight frame, with marked tendency to colliquative sweating, and a notable inability to assimilate either ordinary foods or fatty matter of any kind, in which the tolerance for large and long-continued doses of alcohol is very remarkable, and the benefit produced by such treatment is very great. 3. In certain chronic neuralgias of the aged, where the power of digesting ordinary food is almost suspended by reflex irritation, an almost exclusively alcoholic diet continued for some time, occasionally works wonders. 4. In certain infantile chronic diseases, attended with marasmus and an inability to digest ordinary food, small and frequent doses of alcohol, continued for some weeks, produce a remarkable revolution in the general condition.

In all the above instances there is a very notable tolerance of alcohol, and an absence of intoxicative symptoms, under the use of doses which are apparently very considerable.

We turn now to the other side of the account, and the facts we meet with here deserve the most serious consideration of the profession. There are two vast groups of neuroses, the neuralgic and the convulsive, and a third which includes the thousand and one forms of hysteria and of hypochondriasis, for which alcohol is frequently prescribed with a recklessness that to me is both surprising and alarming. Medical science has made the discovery within the last few years that pain, convulsion, and mental disturbance *always*, and not merely sometimes, imply a lowered rather than a heightened vital power. The fact itself is important and valuable, but the practical conclusions which many physicians deduce from it appear to me disastrous. The diseases in question are "nervous;" it is the nervous power, then, which is to be upheld; and a so-called "stimulant" is supposed to be the especially appropriate remedy. But the very hypothesis of the opponents of Todd's ideas is that a stimulant has no permanent influence on the forces of the body, it contributes nothing but a momentary spur to function; it must therefore be frequently repeated to be of any use; and the greater the depression the larger the dose necessary to rouse the failing organism.

We arrive then at this result, which would be grotesque if it were not most unfortunate: That for the very same purely theoretical reason that makes them reject alcohol in acute diseases, and especially decry its use in large doses, a very influential sect of physicians are in the daily practice of recommending its free use in circumstances of chronic disease, where it assuredly can produce mischief of the most permanent kind. The opponents of Todd say, that there are two dangers in the use of alcohol in acute disease: first, that it endangers life; and second, that if life be spared the tendency to drunken habits is left behind. Putting aside the first of these accusations—which, however, I should entirely deny, as applied to the intelligent application of Todd's principles—let us deal with the second. It is not true, I believe, that the administration of alcohol to patients in acute diseases is *pleasant* to them; on the contrary, the perpetual dosing with wine or brandy, which is necessary in a certain proportion of cases, is almost uniformly most distasteful, except with inveterate topers, and sometimes even to them. Whether the alcoholic beverages do good or harm, at least they are not liked, in the great majority of cases, and the patient is left, at the end of the treatment, with a loathing instead of a love for them. Still they can be got down, and retained on the stomach, so long as tolerance, or absence of intoxicative consequences is observed. But a time comes when this physiological tolerance ceases, and along with its cessation there almost always comes a positive shuddering dislike, and often a downright refusal, of the stronger alcoholic beverages. The convalescent may relish *beer* in moderation, but in my experience he almost always hates the idea of wine or brandy. There is no statement which has ever surprised me more by its entire want of correspondence with the facts of my own experience, than this very common assertion, that stimulation in acute disease is apt to create a subsequent tendency to drinking. The case is vastly otherwise, however, in chronic or nervous diseases, especially those attended with much mental depression. The great majority of these patients either at once, or very readily, develop a strong liking for alcoholic beverages; a liking, too, which is precisely of the most dangerous kind. I cannot take a better illustrative instance than that which is unfortunately so very common—the case of women who, whether married or not, have difficult and painful menstrual periods, accompanied with neuralgic pain and hysteric depression of spirits. If ever there were a case in which the physician may make himself, in the most tragic sense, the evil genius of his patient, it is this. The woman has pain, or spasm, or both, and the doctor tells her that brandy will relieve these symptoms, which is true enough. It is also true, that if the brandy could be administered strictly as a medicine, regulated to the minimum dose which was necessary, no harm would be done, though no permanent cure could be expected. But if it be left to the patient herself to settle the dose, there is the greatest danger that she will exceed the necessary quantity, and instead of taking a moderate stimulant dose, which would relieve pain without narcotising, will take a quantity which produces semi-intoxication. There is no more dangerous trial, for a female who is subject to these periodic attacks of pain and depression, than that first experience of alcoholic narcotism. In such circumstances it is a melancholy fact, that the *oblivion* of slight drunkenness is most seductive; and the chances are great that on the recurrence of the same symptoms the patient will long, with increasing eagerness on each successive occasion, for the same luxurious stupefaction. Let no one think that this warning is the expression of fears based on mere imagination; my own experience has supplied only too many instances of the reality of the danger, and inquiry among physicians whose practice in nervous diseases is large has added greatly to the strength of my convictions. I have for a long time made it a rule *never* to recommend or even allow, a patient subject to ovarian neuralgia to take alcohol at all, except in the ordinary quantities *with meals*. Pain and nervous depression is most quieted with small subcutaneous injections of morphia, or, still better, of atropia. It is a very bad precedent to permit a woman to take alcohol for the mere momentary relief of pain or depression.

Although the instance above cited is, perhaps, the most striking illustration of the dangers of indiscriminate stimulation in chronic disease, there are many others scarcely less important. The whole group of chronic painful and convulsive disorders stands in the same relation to alcohol. The remedy can be administered strictly *as a medicine*, in small stimulant doses, with good effect. But there are moral elements in the case which we cannot, without grave peril, leave out of sight. The patients are very generally weak in their power of mental resistance, so that to expose them to a temptation is more than usually dangerous. Some persons will be surprised at this statement, and no doubt there are splendid exceptions to be found in individual cases; but I am convinced that the rule is such as has been stated. To the few who bear up heroically, and with undiminished intellectual and moral force, against chronic pain and mental misery, must be opposed an overwhelming majority who do not bear up at all, or who do so only by drowning their troubles, either in actual physical narcotism, or else in some factitious emotional intoxication, which is nearly or quite as bad as the other. Therefore, to put such an agent as alcohol into the hands of such persons, or in any way to encourage their taking it at other than the usual meal-times, under the restraint of the presence of other persons, is to court danger in a most direct way.

It seems to me that there are two rules, the observance of which ought to become general, and only to be departed from under very special circumstances. One is that alcohol should never be directly prescribed for the relief of chronic pain, convulsion, or spasm, during the *self-conscious* period of life. In infancy and early childhood it is quite possible to administer it exactly as one would a medicine, without leaving the faintest trace of a hankering after its illegitimate effects. In the old age of those who have led temperate lives, but have habitually used alcohol, it may also be possible to permit the somewhat freer use of it. But during the whole of that period which corresponds to the sexual life, especially in women, the organism is so exquisitely alive to its own emotions, that the effect of a false step in the direction of narcotic indulgence may be tremendous. A second rule is, that never, under any circumstances where it is possible to avoid it, should alcohol be given for the class of maladies we are considering, in larger quantities than those already roughly indicated as the limits of its useful *dietetic* employment in health. There is no true physiological tolerance for it in these cases; even in the instance of severe and agonizing pain, in which large quantities of brandy may be swallowed without any apparent drunkenness, the appearance of considerable quantities of unchanged alcohol in the urine, and the occurrence of after headache, &c., show that there has been true narcotic poisoning. And the relief of such pain (*e. g.* angina pectoris, severe ovarian neuralgia) may be better and more speedily accomplished by the use of ether, or of morphia or atropia subcutaneously injected. And as for the whole series of chronic convulsive disorders, and of the mental states which hover between hysteria and insanity, I am convinced that everything which can be done in a more special direction than that of careful improvement of nutrition can be far better effected by bromide of potassium, than by the most liberal use, or as I should call it abuse, of alcohol.—*Practitioner, July*, 1869, *p.* 34.

7.—THE SULPHO-CARBOLATES IN THE TREATMENT OF DISEASE.

By Dr. Arthur Ernest Sansom, Physician to the Royal Hospital for Diseases of the Chest, City Road; to the North-Eastern Hospital for Children, &c.

[The ease with which fermentation may be arrested by the addition of small quantities of such substances as oxide of mercury, of strychnia, or of solution of the sulphites is remarkable. Why should not the progress of zymotic diseases—that is the fermentation going on in the blood in these diseases—be checked with equal ease.]

It being proved that disease-germs are capable of destruction whilst they are outside the individual organism exposed to their influence, the question next occurs: Is it possible to destroy such organized molecules, when once they have entered the living body and have commenced that action which is manifest in the production of phenomena of disease? That such a thing has *no primâ facie impossibility* is shown by the fact that we are frequently employing internal remedies to destroy entozoa having far higher vital endowments. Furthermore we have evidence that the very drugs which we have been accustomed to administer in zymotic diseases have themselves great power as antiseptics or destroyers of germs. I have myself determined experimentally that the fermentation of two fluid drachms of yeast mixed with 25 grains of sugar, and placed in circumstances the most favourable for the process, is wholly arrested by the following:—Liq. hydrargyri bichloridi, half a drachm; tincture of the perchloride of iron, five minims; sulphite of soda, five grains; sulphuric acid, one-tenth of a grain. Fermentation was *almost* wholly arrested by five grains of acetate of lead.

It is obvious that these various agents in arresting fermentation cannot manifest their effects wholly and solely in virtue of their chemical powers. Most of them are admitted to be oxidizing agents. But how totally insufficient must be the quantity of oxygen which the efficient amounts of the various compounds are capable of liberating to chemically alter the oxidizable stuff of the ferment plus the fermentescible matter! Sulphite of soda is a *de*oxidizing agent; its power can be estimated by the quantity of oxygen which is required to convert it into a sulphate; this quantity is less than one-sixth of its weight. Five grains, therefore, of sulphite of soda would absorb considerably less than one grain of oxygen, the merest fraction of the oxidizable matter present in the sugar employed.

When we take into consideration the observed effects of sulphurous acid and the sulphites in arresting the vitality of living things, we must, I contend, conclude that these are far less chemical agents than they are poisons to the low forms of life. When we consider the myriads of germs which a few grains of a sulphite is capable of destroying, we have a *primâ facie* ground for administering them to the individual body which is suffering the decompositions of disease. We find that the administration is attended by no deleterious effects to the higher organism. Moreover, that the salts administered do possess that power of arresting internal decompositions which we have proved them to possess in regard to external fermentations, is established by the fact that if the sulphites be freely administered to a living animal, its tissues after death do not present the phenomena of decay.

These observations as to the mode of action of the sulphites pertain with greatly increased force to carbolic acid. It is proved that a mere trace of carbolic acid kills all the low forms of animal and vegetable life, arrests fermentation, and forbids decomposition. Yet not only is it shown that it exerts scarcely any purely chemical action and interferes with scarcely any purely chemical change, but its elements ($C_6 H_6 O$) are precisely the same as those upon which it exercises its influence. It seems to be impossible that we can disregard the testimony of the host of observers that have declared to the efficacy of carbolic acid in arresting the spread of disease when employed as a disinfectant. Now if it has, as the able chemists have determined, no appreciable chemical action on decomposition and its products, while it instantly destroys all living germs, we are in this dilemma: either we must agree to the germ theory, or we must acknowledge that the national resources have been expended in times of cholera, on a body which is inert and useless.

The internal diseases in which, according to the records of observers, the administration of carbolic acid has been attended with success are the following:—Dyspepsia, diarrhœa, dysentery, cholera, croup, diphtheria, hooping-cough, bronchitis, phthisis, erysipelas, syphilis. In most of these diseases it will probably be acknowledged that various decompositions are taking place within the body, which, according to experience derived from its operation outside the body, we may consider that carbolic acid has an *à priori* likelihood of arresting.

In my opinion, however, experience has shown that there are difficulties, and even dangers, in the administration of carbolic acid. 1. It is of a very nauseous odour and taste, so that, even in extreme dilution, it is difficult of administration, especially to children; 2. its thorough solution in unaccustomed hands is not very easily accomplished; 3. it is a violent irritant of sentient surfaces, so that it can possibly be administered in only small amounts;

4. it has a peculiar caustic action on animal membranes, evidenced by its turning mucous surfaces of a dead white colour; 5. it has a toxic action, producing hyperæmia of the nervous centres; 6. it forms compounds possessing varying modes of action with different organic compounds—with alcohol, glycerine, fats, &c.; so its effects will probably vary not only with the medicinal adjuncts with which it is administered, but with the nature of the contents of the stomach at the time of administration.

The double salts of carbolic acid which I have introduced, and whose physical characters, &c., I have described in a paper read before the Royal Medical and Chirurgical Society on March 9th, 1869, will, I think, prove to possess, as remedial agents, the advantages, without the difficulties and dangers, of carbolic acid. These are salts of the double acid, sulpho-carbolic acid.

SULPHO-CARBOLIC ACID (*Syn.* Sulpho-phenic acid, $C_6 H_6 SO_4$) is produced by the admixture in equivalent proportions of sulphuric and carbolic acids. I have obtained the pure double acid in the form of very long, colourless, finely-acicular crystals, which are very deliquescent.

THE SULPHO-CARBOLATES are produced by neutralization with the various bases. I have succeeded, with the help of Messrs. Balmer, in producing fine specimens of the salts of sodium, potassium, ammonium, magnesium, zinc, iron, and copper.

Preparation.—I have found many specimens lacking the true characteristics of a sulpho-carbolate. The danger is contamination with: 1, the sulphate of the base employed; 2, the carbolate which evolves the odour of carbolic acid; 3, free sulphuric acid; 4, free carbolic acid. The best method is to produce first a definite sulpho-carbolic acid by taking equivalent weights of its components, and to neutralize with the calculated weights of the oxides employed. Crystallization should take place slowly without heat.

Tests.—Each sulpho-carbolate should possess a definite and decided crystalline form. They should give off scarcely any odour of carbolic acid; they should give no precipitate with barium chloride. If boiled for some time with strong nitric acid, and then diluted with a little water, a yellow crystalline deposit of picric acid should be thrown down, and the filtrate should give with barium chloride the reaction of sulphuric acid. On a crystal being dissolved in distilled water, and a few drops of solution of perchloride of iron added, a beautiful purple or mauve solution should be produced. I have found $\frac{1}{60}$ grain of sulpho-carbolate of sodium capable of inducing the mauve tinge.

Mode of Action.—It must not be supposed that the sulpho-carbolates are powerful *direct* antiseptics; I am convinced that they are far less powerful than carbolic acid. From experiments which I have made I conclude that, in regard to prevention of fermentation, half a grain of pure carbolic acid is equivalent to twenty grains of sulpho-carbolate of sodium. It may therefore be concluded, that not only is the salt as compared with the acid far less efficient in destroying the life of vegetable cells, but also that the acid loses in this power by its combination with the base; *i.e.* that the same amount of carbolic acid, when free, is equally efficient with nearly twenty times that amount when in combination. The important characteristics, however, of these salts are, in my opinion, (1) that they can be readily administered to the living animal body without difficulty or danger; (2) that *in transitu* throughout the system the carbolic becomes evolved, producing its beneficial effects. When sulpho-carbolate of sodium has been administered to an animal, sulphate of sodium is found in the urine and in the tissues, while carbolic acid escapes with the breath. The flesh of the animal resists post-mortem putrefaction.

By administering sulpho-carbolate we are enabled in effect to administer carbolic acid in an innocuous form, and in a quantity which it would be impossible to employ by other means.

Practical Employment.—The *sulpho-carbolate of zinc* has been chiefly used as an external application in the form of lotion. Mr. John Wood was, I believe, the first thus to employ it. Three to ten grains should be dissolved in an ounce of distilled water. The effect on suppurating surfaces is marked in the arrest of pus-formation and the abolition of all fœtor. Mr. Wood believes with me, that by the influence of the organic constituents of the suppurating surface the sulpho-carbolate is decomposed and carbolic acid is evolved. It is greatly superior to carbolic acid, on account of the absence of irritating qualities, and of all unpleasant odour. I have used it as an injection in gonorrhœa, the discharge of which it at once checks.

For internal administration I have chiefly used the sulpho-carbolate of sodium. This is freely soluble in water, and the solution has scarcely any objectionable taste. Children take the pure salt readily.

Dose.—From repeated trials I convinced myself that doses of from twenty to sixty grains could be readily absorbed. I have now employed it in about 200 cases. In not more than six out of the whole number have any direct contra-indicating effects been produced by the drug. In two cases sickness occurred, in the others a feeling of slight stupor or powerlessness was produced, which passed away in a few minutes.

Use in Phthisis.—In my paper read before the Royal Medical and Chirurgical Society I gave an analysis of thirty-five cases of phthisis, in which I administered sulpho-carbolate of sodium in doses of ℈ i to ℥ i. I considered this table as proving that the drug could be given for periods averaging two months without the production of any ill effect. On the other hand, there was for the most part a steady gain in nutrition. A further experience has confirmed and increased my belief, that in the sulpho-carbolate of sodium we have a drug valuable in the treatment of pulmonary phthisis. I do not believe that it has any special power in arresting the progress of tuberculisation. Rapid cases occur over which it appears to have no control whatever; but over the accidents of tuberculhæmia it seems to me to exercise a benignant influence. Under the treatment, I have found in many cases strength increased, rest improved, fœtor of expectoration arrested, night sweats removed, and appetite increased. I have made an analysis of fifty-two cases treated by the sulpho-carbolate. These include ten in the *first stage* of the disease; eight of which manifested decided improvement. In one case the local signs disappeared; one gained in weight 2½ lbs. in three weeks; another, 2 lbs. in six weeks; a third, 6 lbs. in five weeks; and a fourth, after manifesting great improvement, left off all treatment, and on my observing him three months afterwards, he had gained 9 lbs. On the other hand, one case manifested sickness and progressive loss of weight, and the drug was discontinued; and the signs in another case were doubtful.

In the *second stage* I observed thirty-one cases. Twenty-four testified to considerable improvement, for the most part manifest in increased strength and energy. A gained 1 lb. in a fortnight; B, 1 lb. in six days; C, 3½ lbs. in a month; D, 1 lb. in two months; E, 3 lbs. in three months; F, 8 lbs. in two months; G, 2 lbs. in three weeks. In one case in which the temperature was carefully noted it fell from an almost constant 97·6° Fahr. to an almost constant 95·6° Fahr. On the other hand, in one case which at first manifested improvement the disease quickly progressed; the same happened in a second case, who attributed his symptoms to domestic trouble. One case rapidly went from bad to worse, and in six there was no improvement.

In the *third stage* I noted eleven cases. One case rapidly improved, the patient expressing himself as "feeling a different man." One gained 2 lbs. in a fortnight, and on observation two months after had further gained 2½ lbs.; another gained 2¾ lbs. in two months; four testified to feeling increase of strength. Three, however, showed no influence exerted over the fatal course of the disease, and two were doubtful. Altogether I conclude that but very little good is done by the drug in the third stage of the disease, but enough evidence exists to warrant that it may exercise a beneficial influence over the conditions in the first and second stages.

My experience of the use of sulpho-carbolate of sodium in *zymotic diseases* is unexceptionably favourable. During twelve months I have administered it in every severe case which has fallen under my observation. I have not had one fatal result. I have, however, always strenuously endeavoured to guard against a prematurely uttered conclusion. I only hope for a fair and impartial trial of the mode of treatment by my professional brethren.

Severe Tonsillar Ulceration.—I employed the treatment in five cases, which all rapidly recovered without the occurrence of suppuration. The first case in which I thus employed it was that of Mr. H., to whom I was called by a message expressive of great urgency, on December 4, 1867. I found the patient suffering extreme pain and inability to swallow, salivation, voice greatly impaired; pulse 120, and much febrile excitement. He had been my patient the previous year with similar symptoms, though of less severity. There then occurred much suppuration, and the patient was confined to his home for about a fortnight. This time, anticipating a similar history, I counselled absolute rest, demulcent drinks, and half a drachm of sulpho-carbolate of sodium in solution every four hours. I arranged to call the day but one following; on doing so I found to my surprise that my patient had gone to business. He subsequently called on me professing himself quite well; the ulcerated tonsils were cicatrising. All the other cases recovered uninterruptedly. Of course such results may have been fortuitous, but they were strangely different from those of my former experience; and I now never hesitate to use the sulpho-carbolate in analogous cases.

In a case of *diphtheria* with abundant false membrane I administered the sulpho-carbolate of potassium. Perfect recovery took place; but as brandy and beef-tea were assiduously administered, I should hesitate to attribute to the sulpho-carbolate the chief share of the success.

I employed the sulpho-carbolate of sodium in five severe cases of *scarlet fever.* In one of these cases the thermometer in the axilla indicated 105° F., in another 103° F.; in the former there was slight albuminuria on one day, which disappeared the day following; on the twelfth day of the fever the temperature had fallen to 93·2°. Recovery was perfect, rapid, and uncomplicated. In another case, though there were on the first two days severe throat-signs, a universal rash, and subsequently the most perfect desquamation, there was so little *malaise* that the patient, a little girl, was dressed each day, and continued her play as if in health. All the cases recovered in a less period of time than under any treatment which I had previously employed in similar cases.

I employed the sulpho-carbolate of sodium in two cases of facial *erysipelas.* Both evidenced extreme febrile symptoms. I had only a single opportunity of using it in *variola;* the patient, a middle-aged gentleman, had been vaccinated in childhood; he recovered rapidly.

It is only in the hope that my professional brethren will give the plan of treatment a trial that I record these few imperfect observations. Individual experience may indicate a possible solution of certain of the therapeutic problems presented by these diseases, but it can never pretend to anything approaching rigid scientific accuracy. The zymotic poisons differ not only in themselves, but in the secondary conditions which they induce; and a treatment successful in the case of one may be unsuccessful in the cases of others. I believe that almost every day we are accumulating data which tend to the elucidation of their nature and history. The practical problems of the too much neglected art and science of therapeutics are only to be solved by the study of the results of accumulated individual observations, and by organised experience.—*Practitioner, July,* 1869, *p.* 5.

8.—OPINIONS OF IRISH PHYSICIANS ON THE TREATMENT OF ACUTE RHEUMATISM.

From Dr. Charles Benson, Physician to the City of Dublin Hospital, and Professor of Practice of Medicine in the School of the Royal College of Surgeons.

The treatment which I generally prefer is "the alkaline;" giving the bicarbonate of potass, for the most part, with lemon juice in effervescence, sometimes with decoction of cinchona, or with colombo, according as may best suit the stomach, or condition of the patient in other respects. I usually combine colchicum and digitalis with these, giving, in 24 hours, from 30 to 60 minims of each, and at bed-time an opiate. My favourite opiate is Dover's powder—10 or 15 grains at night, and, if there be much suffering, 5 grains three or four times a day in addition. I think the colchicum helps to eliminate the *materies morbi* from the system, and I fancy the digitalis promotes the same object, while by its sedative influence it lessens the danger of cardiac complication. I do not prescribe the bicarbonate of potass in such large quantities as Dr. Fuller recommends. It is too lowering for the citizens of Dublin. I seldom use more than 4 drachms in the day. Sometimes I give a little iodide of potassium also, and when the patient is scrofulous or tainted with syphilis, this appears to be useful. In delicate or scrofulous subjects I give cod-liver oil freely, and the iodide of iron or some some other chalybeate. I regulate the bowels with injections of soap suds, to which I add a little soda or potass to follow up the alkaline plan, without too much distressing the stomach. When a joint is particularly painful I put on poultices of linseed meal, containing some potash or soda, and when effusion takes place into a joint I often have recourse to a blister. The jerking pulse and impulse which precede the murmur of endocarditis for 12 or 24 hours suggested to me the employment of digitalis, and I think it is of use as I said. When the heart is threatened, which may always be known by the jerking pulse and impulse, I apply blisters to some of the joints, and just below the left nipple—pushing the opiates and digitalis remedies still further.

From Dr. HENRY FREKE, Vice-President College of Physicians; Physician and Lecturer on Practice of Medicine Steevens' Hospital, Dublin.

The result of my experience is simply this:—I am strongly of opinion that although we can mitigate symptoms, we at present know of no means whereby we can cut short the disease, or with any approach to certainty reduce its duration. That there is no constancy to be recognised in the duration of the disease, but that either with or without treatment it *may* terminate in a fortnight, or *may* last for two months. That if two patients in apparently similar circumstances, and presenting in every respect similar symptoms, be placed on the same line of treatment, one will occasionally recover in the course of twelve or fourteen days, while in the other the disease will frequently have a duration of seven or eight weeks, and that *whatever* be the line of treatment adopted.

From Dr. SAMUEL GORDON, Physician Richmond, Whitworth, and Hardwicke Hospitals; Lecturer on Practice of Physic Carmichael School of Medicine.

I have no doubt but that the alkaline and diaphoretic plan of treatment is of essential service in shortening the duration of rheumatic fever, and in lessening the probability of cardiac diseases. Even unaided, when carefully carried out it is of great value, but I attach much importance to the constitution of the patient affected, and to the fact of it being a primary attack or otherwise. The preparation which I generally use is the combination of bicarbonate and citrate of potass—that is, I give very large doses of bicarbonate of potass in effervescence with lemon juice—giving a large excess of the bicarbonate.

If the patient be of a strong constitution, and the attack a primary one, I usually add small doses of tartarised antimony with great advantage. I think that when the depressing effect of antimony on the heart can be produced without vomiting, it proves more serviceable in averting cardiac complications. This was the plan of treatment usually adopted by the late Dr. Crampton, after he had given up the practice of venesection, and it was followed by great success. I need not say that it does not interfere with the use of opium, but rather assists it. The use of opium I consider to be indicated in those cases in which the fibrous structures are much engaged, and when not contra-indicated I always prescribe it in the form of Dover's powder; but I never use the opium without having first tried the alkaline and diaphoretic plan for at least 24 hours.

In asthenic constitutions, or when the attack is not primary, I find great advantage from the addition of large doses of the iodide of potassium, combined in this, as in all other cases in which I use it, with small doses of aromatic spirit of ammonia.

When there is much local distress, I apply the vesicating collodion freely and afterwards a warm solution of the bicarbonate of potass, covered with French wadding and sheet gutta-percha.

With regard to the occurrence of endocarditis, as indicated by endocardial murmur, I have long taught that the sign is most fallacious: the most severe and most intractable cases of endocarditis which I have witnessed have been unaccompanied by any murmur (vide Dublin Hospital Gazette, April 1, 1857), and on the contrary, I am satisfied that on account of the existence of an endocardial murmur, numbers of cases are recorded as endocarditis in which no inflammatory exudation has occurred.

From Dr. Hayden, Fellow and Censor King and Queen's College of Physicians; Physician to Mater Misericordiæ Hospital; Professor of Anatomy and Physiology in the Catholic University.

In acute rheumatism of the decidedly sthenic type, of which I have seen comparatively few cases within the last six months, I have given full trial to the alkaline treatment.

My experience of it is, on the whole, favourable. It never fails to alleviate articular pain, when pushed to the extent of rendering the urine alkaline in reaction. It should always, when not contra-indicated by other considerations, be pressed to this point, short of which it fails to give relief.

I am convinced, however, that the alkaline treatment, carried even to the point just indicated, does not confer certain immunity from cardiac complication, *e. g.*, a man aged 45, temperate, was admitted to hospital under my care on the 5th May, 1868, suffering from acute articular rheumatism, engaging most of the larger joints, but chiefly the left elbow; the cardiac sounds and action were normal. He was at once put under alkaline treatment as follows, viz.:—

℞. Acetat. potass. ʒ iv.; bicarbon. potass. ʒ ii.; tinct. opii ʒ i.;
mist. camphor ad. ℥viii. St. coch. mag., 2nd q. horâ.

On the following day the urine was neutral, and the articular pains less severe, and on the next (May 8th) the urine was decidedly alkaline in reaction; but the patient was not so well. He had raved through the night, and was fidgety and somewhat incoherent; pupils contracted, and conjunctivæ injected. He likewise had cough with mucous expectoration, and complained of pain in the situation of the right nipple. Cardiac sounds normal, and action rapid; cardiac complication anticipated.

May 9. *Mane;* patient rather pale; pupils much contracted; pulse 144, weak, and less full; respiration quick and embarrassed. He is incoherent, a loud double friction-sound audible over the entire precordium, but loudest and most distinctly of an "attrition" character at the apex; no increase in area of precordial dulness. Mercury was now substituted for the alkalies, and wine was given in doses of one ounce every second hour. He became rapidly worse, and died at 8 p. m., having had a fit of convulsions a short time previously. A *post mortem* examination was not permitted, but the area of precordial dulness was ascertained by percussion to be much extended; the precordium likewise projected.

Here then was an example of pericardiac, and likewise in all probability of meningeal engagement in acute rheumatism, whilst the blood was actually saturated with alkali.

In the subacute form, or that in which the febrile symptoms are less decidedly acute and sthenic, the pulse under 100, the tongue but moderately coated, the skin not remarkably hot, and but barely moist, urine not copious, and exhibiting lithates in small proportion, articular pains not urgent, and swelling moderate—in cases of this character, of which latterly I have seen but very few, I have found the best treatment to consist in lemon-juice, wine, and sustenance. Cardiac complication is very rare.

During the last six months, rheumatism of the low or asthenic type has been very prevalent in Dublin, and almost to the exclusion of the ordinary acute form of the disease. It has been characterised by severe pain of a singularly migratory character, in the fibrous structures of and in the vicinity of the larger joints, but rarely engaging the synovial membranes; indeed, in no *instance in my experience*, save those of the wrist-joint and hand. The latter joints have been in many instances so suddenly invaded that in the course of a single night they have become swollen, red, and acutely tender, there having been no appearance whatever of such engagement on the preceding day, and only the premonitory symptom of slight stiffness.

The heart or pericardium (frequently both) has been engaged in the great majority of these cases, and the treatment which I have found most efficacious has been opium in large doses (gr. ii. of the watery extract twice or thrice daily), wine, porter, and animal food.

From Dr. Henry H. Head, Fellow of the College of Physicians; Physician to the Adelaide Hospital.

The result of my own observations has been decidedly in favour of the treatment by alkalies and their salts, in combination with the vegetable acids, in cases where the symptoms are very acute, characterised by quick, hard pulse, high temperature, and acid secretions, and where the constitution of the patient has been hitherto good; and I think I can assert, with perfect confidence, that where this course has been pursued, in combination with careful protection, cardiac complications have been extremely rare in cases where there was undoubted evidence that such lesion did not previously exist. There is, however, a good deal of difficulty in deciding this question, as the fatigue and exposure to which patients are subjected whilst being conveyed to hospital frequently cause an attack of endocarditis, which may undoubtedly exist without giving rise in its early stage to the usual physical signs, which only become apparent when lymph is effused. Two cases have recently come under my notice, in which the endocardial murmur was not observed, although carefully watched for, until the convalescence of the patient was considerably advanced, and at least twelve days had elapsed after the occurrence of symptoms, which led me to fear the existence of endocarditis, and which occurred a day or two after the patient's admission into the hospital.

In the case of patients who have suffered from repeated attacks of rheumatism, when the character of the fever is low, or the constitution previously bad, the alkaline treatment (if adopted at all) should be carried out with great caution, and should be combined or very soon followed by the use of quinine or bark.

Where the joints affected are numerous and the pain is very acute, I have found very great relief afforded by the blistering method suggested by Dr. Herbert Davies; but although the alleviation of suffering is considerable, I do not consider that this treatment shortens the duration of the attack. It is, in fact, impossible to lay down any one rule suitable in all instances, and whatever may be the theory regarding the nature of the disease, there can be little doubt that each case should be treated according to its own peculiar conditions.

From Dr. Alfred Hudson, Physician to the Meath Hospital.

My strong impression is that the early and free exhibition of the alkalies or their neutral salts is prophylactic of cardiac affections: I even believe that they are the best curative measure which can be employed when endocarditis has actually supervened.

In several instances I have known an endocardial murmur which, commencing at an early period, had persisted throughout the illness to disappear gradually under the influence of large doses of the neutral salts, more especially of the acetate and nitrate of potash. One of these cases was so striking as to be worthy of mention.

A gentleman, aged 25, complained of tightness and pain in the precordial region, with a well-marked endocardial murmur at the apex about the end of the first week of rheumatic fever.

This murmur continued unchanged in seat or character during the illness and during his convalescence.

From the first appearance of the murmur I pursued the alkaline treatment steadily and continuously, giving a drachm of nitrate of potash and six drachms of *bicarbonate of soda* daily for many weeks.

Ultimately the murmur entirely disappeared; on the patient's death long afterwards, of a different disease, I had the satisfaction of learning that the heart was found to be perfectly healthy.

From Dr. Henry Kennedy, Physician to Sir P. Dun's Hospital, and to Cork-street Fever Hospital.

For some years past I have had the greatest confidence in what is known as the alkaline treatment laid down by Drs. Garrod and Fuller, for acute rheumatic fever. Unless I disbelieve my senses I cannot doubt its great value in shortening the duration of this disease, for I recollect well when six and eight weeks were the common periods for a patient to be in hospital when labouring under this affection. Now, unless some complication arise, such as pericarditis, and this is, of course, exceptional, three weeks is about the time—that is, reckoning from the day the patient was submitted to the treatment. I have seen so many instances where patients have remained at home for ten to fourteen days, and yet no amendment had occurred, though they were necessarily confined to bed, that I cannot doubt the opinions lately advanced in London are erroneous, unless, indeed, we suppose the disease met in that city is different from what it is in Dublin, and this it is hard to do. Whilst, however, I thus speak in favour of the alkaline treatment, I do not limit myself entirely to it. In by far the majority of cases the disease is attended by very severe suffering. Hence I have been in the habit of joining the anodyne to the alkaline treatment, and, I believe, with the best results.

From Dr. Robert D. Lyons, Physician Richmond, Whitworth, and Hardwicke Hospitals; Professor of Medicine and Pathology, Catholic University.

Dr. Lyons has had a large experience in the treatment of rheumatic fever for some years past in his clinique at Jervis-street Hospital, and subsequently in the Hospitals of the House of Industry. In both Hospital and private cases he has, as we are informed, given trial to all the principal plans of treatment which have had any authority to recommend them, and as the result of observations conducted with care he has come to the mature conviction, that with certain adjuncts in the way of clinical manipulation of the affected joints, the alkaline plan of treatment offers advantages in which it is not approached by any other method of dealing with the malady. Dr. Lyons has, in fact, adopted for some five years past a settled mode of treatment of rheumatic fever, the details and principles of which may be thus briefly summarized:—

The patient is placed in a flannel jacket, and between blankets, the sheets being removed from the bed. The joints affected are assiduously poulticed with a mash of camomile flowers and poppy heads, reduced to a soft state by being simmered for from one to two hours. These poultices are removed and replaced by fresh ones at intervals of three or four hours, and thus this soothing application is kept up "hot and hot," so long as pain and swelling continue to be complained of, and so marked and immediate is the relief thus afforded that the patients will be found frequently to ask urgently for a fresh poultice to a joint which is becoming affected. To procure sleep, and to ease and tranquillize the patient in this very painful malady, from one-quarter to a half a grain, or even a grain dose of opium is given every third, fourth, or sixth hour, according to the age of the patient, and the distress and urgency of the symptoms.

The following alkaline mixture is next prescribed, the proportions and the vehicle of exhibition for which are altered according to the state of the patient's stomach. In eight ounces of the infusion of gentian, cascarilla, or any of the light bitters, half an ounce of the bicarbonate, two drachms of the acetate, and two drachms of the nitrate of potash, are ordered with half an ounce of any ordinary flavouring syrup. Of this mixture one tablespoonful is administered every third hour, except when the patient is asleep.

The diet is restricted to milk and any simple farinaceous food; and for drink, soda or kali water, or lithia waters in effervescence are allowed *ad libitum*.

From Dr. William Moore, King's Professor of the practice of Medicine; Professor of Clinical Medicine. Sir P. Dun's Hospital.

With respect to the treatment of "Acute Rheumatism" Dr. Moore cannot *fall in with the "do-nothing"* system. He is an advocate for the alkaline treatment, and after having given those in use, individually repeated trials, he is disposed to place most reliance on the acetate or bicarbonate of potash, especially the latter, in doses varying from half a drachm to one drachm every fourth hour: having first relieved the chylopoietic viscera by a mercurial purgative. He has found this treatment, combined with an opiate at bed time, *fluid* diet, and keeping up a general high temperature, particularly over the affected joints (which is best done by wrapping them in raw cotton covered with oiled silk), very satisfactory.

Dr. Moore states that although not armed with statistics, his experience leads him to conclude that where the above treatment is steadily carried out, not only is the duration of the disease shortened, but endo and pericardial complications are of less frequent occurrence.—*Dublin Quarterly Journal, May*, 1869, *p.* 431.

9.—CASES OF ACUTE RHEUMATISM TREATED PRINCIPALLY ON THE ALKALINE METHOD.

By Dr. Charles H. Robinson, Demonstrator of Anatomy to the Ledwich School of Medicine; late Medical Officer to the Peninsular and Oriental Company, &c.

The treatment of acute rheumatism has lately been subject to a good deal of discussion, since the communication brought forward by Drs. Gull and Sutton before the members of the London Medical and Chirurgical Society in January last, on the supposed inefficiency of medicine in this disorder, and their firm reliance on mint-water and cotton wadding in its management. I am, however, convinced that any unprejudiced observer who carefully examines the statements brought forward by Drs. Gull and Sutton will find, in the results obtained, a material difference from what those gentlemen would lead us to believe; and that their theory was unmistakably refuted by Drs. Fuller and Dickinson.

For my own part, I am a firm believer in the alkaline treatment of acute rheumatism; my chief reason for this belief being the satisfactory results obtained by this method far beyond any other, not only in the duration of the disease, but also in the almost total absence of pericarditis and valvular affections of the heart.

The following cases came under my notice when medical officer to the Cape mail steamers and Peninsular and Oriental Company, and I adduce them for several reasons. They all occurred at sea, and therefore were necessarily exposed more than on land to relapses. Some of the patients were passengers, some seamen; but, with one exception (Case 1), I had each under my observation from the very commencement of the affection, and long after it had terminated. In each the heart was carefully examined at regular intervals, and in none of the six cases was it ever implicated.

In 1862, Dr. Dickinson read a paper before the members of the Royal Medical and Chirurgical Society, in which 48 cases of acute rheumatism were treated by full doses of alkalies (four drachms to the ounce and a half daily of the salts of potash or soda), and in only one of these 48 cases was there any cardiac affection. These facts prove that by no other method can we expect such gratifying results as by the alkaline mode of treatment.

Of the following cases, five were articular, the remaining one a case of muscular (fibrous) rheumatism.

Case 1.—George D., Esq., aged 33, applied to me on the 7th November, 1862, suffering from acute rheumatism of the finger-joints, shoulders, and hips, arising from a severe wetting received a few days before. Has had several attacks of rheumatism before. After a purgative was administered, I gave bicarbonate of soda in a mixture, dose two drachms three times a day, cotton wadding being applied to the swollen joints.

Third day. Gave three grains of calomel last night, to be repeated every night until further notice. The heart was carefully examined, and found in a healthy condition. Fomentations of vinegar as hot as could be borne, with gutta-percha *tissue external to the* lint soaked in the vinegar, applied very often to the joints. Stomach a good deal out of order; tongue white; pulse 96; copious perspirations day and night, which make him extremely weak; urine reddish, with a heavy brick-dust sediment. His diet consists of tea, toast, soda-water to assuage the thirst, soup and broth; but his appetite is wretched.

Seventh day. As the pains are still severe he was ordered ten grains of Dover's powder at bed-time; he is, however, somewhat improved.

Ninth day. Up for one hour to-day. To take the calomel only every second night. Allowed a glass of sherry with water to-day.

Tenth day. Gave the bicarbonate of soda in effervescence with tartaric acid, and stopped the calomel.

Thirteenth day. Urine clearing daily; pulse 80. Soup and boiled mutton for dinner. The joints are almost well.

Sixteenth day. Urine clear; pulse 68. Stopped the tartrate of soda, and gave quinine with dilute sulphuric acid in two-grain doses twice daily.

Twentieth day. Cured. To continue the quinine a week longer.

This patient might have been well sooner, but his cabin was much exposed to draughts, and thus he often took fresh cold.

Case 2.—E. G., aged 38, applied to me on Dec. 3rd, 1862, suffering from acute rheumatism of the fingers and neck. The urine was high-coloured, and deposited a reddish sediment; perspiration copious and highly acid. He was at once ordered bicarbonate of soda in two-drachm doses twice daily in a mixture with a few grains of nitrate of potash; flannel applied externally. On the 9th the urine was natural, the swelling of the joints had disappeared, the pain and fever had left him, and he was discharged cured.

Case 3.—On Feb. 10th, 1863, Mr. B., aged 42, applied to me with both feet affected with acute rheumatism; they were greatly swollen and intensely painful. He was ordered at once the bicarbonate of soda in two-drachm doses three times a day. French wadding to be applied to the joints, and to take three grains of calomel every second night. On the 20th he was discharged perfectly recovered.

Case 4.—Mrs. S., aged about 45, I saw on the 13th of Feb., 1863, suffering from acute rheumatism of the elbows, wrists, left ankle and foot. The same treatment was pursued as in Case 3, with the addition of iodide of potassium to the bicarbonate-of-soda mixture. This was an extremely severe attack,—great swelling of the joints, intense pain, copious perspiration, and highly acid urine; but on the 23rd of February she was discharged cured.

Case 5.—Robert W., aged 49, I saw on the 11th of July, 1864, suffering from acute rheumatism of the left knee-joint, and the fingers of the left hand. I gave bicarbonate of soda in the usual doses in effervescence, with tartaric acid, and two grains of calomel every night. Pulse 88; urine high-coloured, &c.

Third day. Somewhat better. The calomel only every second night. Fingers easier; knee much the same,—still much swollen, and extremely painful; flannel used externally.

Eighth day. Knee wrapped up in cotton wadding, with gutta-percha tissue outside. As he did not sleep well last night, to take at bed-time ten grains of Dover's powder.

Tenth day. Better. Changed the bicarbonate of soda for the bicarbonate of potash. Urine still very turbid and high-coloured, with heavy sediment.

Eleventh day. Ten grains of Dover's powder at bed-time.

Thirteenth day. Added small doses of iodide of potassium to the bicarbonate-of-potash mixture.

Twentieth day. Calomel stopped. All fever had disappeared. The swelling of the joints has been removed; but being stiffish, he was ordered some soap liniment (an ounce), with tincture of opium (four drachms), to rub the affected parts.

Twenty-fifth day. Discharged cured.

This patient was one of the seamen, and persisted in remaining on duty all the time, exposed to every sort of weather both day and night aboard ship.

Case 6.—William M., aged 29, I attended on the 8th of April, 1866, for acute *rheumatism of the* muscular or fibrous character. It was fugitive, flying from one place to another; the urine was reddish, and the pulse feverish. Compound camphor and soap liniments, combined with tincture of opium, were applied locally; and five grains of iodide of potassium were administered every fourth hour. On the third day he was somewhat better, but suffered a good deal of pain. The urine was still of a reddish colour. The iodide of potassium was stopped, and the bicarbonate of soda was given in two-drachm doses, three times a day; ten grains of Dover's powder at bed-time.

Fifth day. The bicarbonate of soda changed to the bicarbonate of potash (half an ounce daily); urine clearing; another dose of Dover's powder (ten grains) at night.

Eighth day. Takes the potash in effervescence with tartaric acid; pains much less; urine almost natural.

Twelfth day. Urine natural; pulse regular; pains disappeared. Discharged cured.

Duration of cases.—Case 1 lasted twenty days; Case 2, six days; Case 3, ten days; Case 4, ten days; Case 5, twenty-five days; Case 6, twelve days: making a total for the six cases of eighty-three days. Thus it will be seen that the average duration of the above cases was a trifle under fourteen days each; or, excluding the sixth case, which was not articular rheumatism, the five cases will show an average of 14⅕ days each—a great improvement, I take it, on the old-fashioned treatment of rheumatism—namely, flannel and six weeks.—*Lancet, June* 12, 1869, *p.* 812.

DISEASES OF THE NERVOUS SYSTEM.

10.—CALABAR BEAN IN TETANUS.

By Dr. William Fenwick, Glasgow.

[The patient was a man about 30 years of age. About a week previously he had suffered a compound fracture of the first phalanx of the great toe; it was dressed by a medical man at the time.]

Two days before I saw him he began to complain of stiffness of the neck and jaws, which had gradually increased, developing into one of the most violent cases of opisthotonic tetanus I ever saw. On examination, under chloroform, the injured part was found in a most unhealthy state, no attempt to retain the bones in position, the cloths surrounding the foot soaked in fœtid discharge. I thoroughly cleansed it, applied water dressing, and surrounded the foot with hot fomentations. As the bowels were constipated and tympanitic, an injection of castor oil and turpentine was administered, which acted promptly, and relieved patient considerably. He was then ordered 2 grs. of powdered Calabar bean every hour and half. The powders were obtained about 11 a.m., and regularly given during the day. On calling at 10 p.m. I found patient had had fewer attacks, and these less violent, and expressed himself as feeling better, attributing the relief distinctly to the powders. There being no symptom to contra-indicate, he was ordered to have the same doses given regularly during the night. Owing to some mischance or carelessness, however, I was much chagrined on calling about 10 a.m. next day to find that he had got no powder since 4 a.m. and been much worse in the interval. The medicine was immediately resumed in 3 gr. doses every hour and half, but the good effect previously produced was not now apparent, and after a day of violent spasm, he died about 7 p.m.

Case 2.—On 7th Oct., 1868, I saw for the first time J. R., aged 9, for whom I had two days previously prescribed, without seeing him, a little simple aperient, for what his mother called "cramp in the stomach." At the first glance it was apparent he was suffering from an acute attack of tetanus, all the symptoms being well marked; he had the risus Sardonicus, could not separate the teeth enough to show even the tip of his tongue, the abdominal muscles were flat, and as *hard as a board,* from tonic spasm, and the attacks of tetanic rigidity were frequent and severe, the patient screaming piteously, with the peculiar anxious, inquiring expression so often seen in the disease. On inquiry I learned that 16 days previously he had got the second toe of the left foot cut pretty severely with a broken bottle, that this, with some hazy notion of Dandie Dinmont's antiseptic treatment, had been loosely wrapped up in cloths soaked in the blood, and no attention paid to it for a week, when it was opened out, and found as might have been expected, in a very offensive state, with unhealthy suppuration. Riga balsam (tr. benzoin. co.), had then been applied, and this had been all the treatment. The toe presented a sloughy, unhealthy appearance, and was directed to have warm poultices applied. His bowels had been constipated for several days, and he had, in consequence, a full dose of calomel insinuated between his teeth, followed in a few hours by an enema of castor oil and turpentine, which moved them slightly. His mother had, four or five days previously, noticed an awkwardness in his manner of walking which she attributed to a "desire" to save the injured foot. This was soon succeeded by the tense abdomen noticed above, and the other tetanic symptoms, till now he lay rigid, unmoving save involuntarily, any interference with the injured part bringing on an attack.

I had little hope of the case, but determined to give the Calabar bean a fair trial, and ordered him to have 2 grs. of it in powder, with ⅛ gr. of powdered opium every three hours. The opium I added experimentally, to see if it would have any relaxing influence on the apparently spasmodically contracted bowels.

8th. In much the same condition. Pulse firm and regular, 96. Abdomen flat, and extremely hard and tense.

9th. Spasms scarcely so violent; no signs of the bean's peculiar action on the system, the pupils normal, if anything slightly dilated. Dose increased to 3 grs., with ⅛ gr. opium as before.

11th. He has been rather easier up to this morning, when the spasms became much more frequent and severe, coincident with a refusal on his part to take any more of the powders. He was, however, induced to resume them, taken in a little ginger beer, and the opium was omitted. A dose of calomel and compound jalap powder was also given, which, however, had no effect. Wound healthy looking; to have water dressing.

He improved slightly during the next day or two, the bowels remaining constipated as before. The purgative powder was repeated, and again, though aided by an injection, without any result, except the passage of some scybalous masses. The prescription was altered on 14th, to three grs. Calabar bean, and 3 grs. powdered rhubarb, to be given every four hours during the day. This was attended to with considerable regularity, an occasional dose being also given during the night, an average quantity of 15 grains of each being given in the 24 hours. The improvement under this treatment was more marked, and it had the further effect of completely regulating the bowels, a motion of natural consistence being had daily. The urine all along had continued to be excreted in fair quantity. On 18th the wound was completely healed, and he was for about 12 hours without a spasm; but the abdominal rigidity had not abated any; the trismus was slightly better, he could separate the teeth about ⅜ of an inch. A very severe spasm was brought on in the evening by his father speaking to, and waking him out of a sleep, and he had four or five very violent ones during the night. The powders, which with the gradual improvement had been given less regularly, were on the morning of the 19th, ordered to be given every 3 hours, till their moderating effects were induced. In the afternoon I was called to see him, owing to a severe pain he complained of in the upper part of the *right* thigh, apparently radiating along the course of the anterior crural nerve, and paroxysmal in character. There was no induration or swelling perceptible, either over the part or over the cœcum, but firm pressure about the femoral ring brought on the spasms, which were also induced by each paroxysm of pain. I ordered an aconite and chloroform liniment to be applied to the part, which soon gave relief.

Up to this time the patient's diet had been almost nil, only a little milk and beef-tea being coaxed down at rare intervals. He was now directed to get, in addition, a table spoonful of wine, or a dessert spoonful of whisky, in his option, thrice a day.

Pulse all along has kept firm and equable, varying very little from 90 to 96 beats a minute; pupils quite natural. Sleep during the first ten days had been fairly got, considering the severity of the symptoms. He slept five or six hours on an average during the night, and had occasional snatches during the day.

On 22nd, the spasms having much abated in frequency and intensity, the powders were ordered to be given only thrice in the twenty-four hours. He got one in the morning, and no more till evening. A much worse night was the result, five or six very severe attacks occurring before I saw him next forenoon, when they were directed to be given every four hours. As formerly, their resumption was attended with good effect. On morning of 24th the interval was increased to six hours. On morning of 25th he was so far recovered as to bear being lifted to another bed, the change being, however, followed by an extraordinary violent attack. This was the first change of position he had had for three weeks, having lain on his back all the time, yet the skin was neither chafed nor reddened. He could now be propped on his side for a short time occasionally. He now also commenced to take a little milk diet with relish, and the stimulant ordered on 19th had been taken to very kindly; in fact, he had almost an insatiable craving for whisky, the form he preferred, and we had great difficulty in keeping him within something like reasonable bounds. He frequently took a gill in the twenty-four hours, and, I must add, seemed all the better for it. Possibly its action in lessening muscular waste was the instinctive cause of the craving.

Soon after being removed he quieted nicely; and having been for thirty-six hours without an attack (getting the powders four times a day), I thought I might try the effect of stopping the remedy. This was done on morning of 28th. He had been about twelve hours without his dose of the bean when the spasms recommenced, now being chiefly felt in the back, less noticeably in the lower jaw. I at once resumed the powders; their effects were as promptly seen as ever. He continued to take them thrice a day for two days, then twice a day, and on 3rd November they were finally stopped. He was now eating voraciously, the abdomen was softer, though much flattened, and the desire for spirits nearly vanished.

On 6th November I got him up, and tried if he could stand, but he was quite unable to do so. He seemed in nearly the same state as that noticed by Dr. Alexander in the November number of the *Journal* (page 46). On being supported by the shoulders he could move his legs freely enough, but could not rest his foot on the ground, merely touching it with the tips of his toes, and even considerable force could not bring the heel down. His stimulant was stopped: he was directed to have brisk friction applied to the legs two or three times a day, and to be encouraged to try to walk, if necessary with support. Three days afterwards he could walk a little, but with an uncertain, vacillating gait, as if the muscular sense was deficient; he did not seem to know the force required for movement. There was also a trace of the tendency to fall backwards which he formerly exhibited.

Four days afterwards, on calling, I found he was in a neighbor's house, and so far as tetanus was concerned, quite well.

I consider this a very interesting case, from the marked way in which the stoppage of the bean allowed the disease to remanifest itself. Thrice it was stopped with the same result, increase or resumption of spasms; thrice it was resumed with the same result, their cessation. Should I have another case to treat, I would prefer giving at once the powdered Calabar bean and rhubarb, which combination acted so well with my second patient. Under its influence, though carefully on the look-out for them, I saw none of the depressing effects which the bean by itself produces.

Patient took altogether about 300 grs. of the powdered bean.—*Glasgow Medical Journal, May*, 1869, *p.* 300.

11.—ON THE TREATMENT OF TRAUMATIC TETANUS WITH CALABAR BEAN.

By Dr. Eben Watson, Professor of Physiology in Anderson's University; and Surgeon to the Royal Infirmary, Glasgow.

[After relating two cases of tetanus treated by Calabar bean, the writer continues:—]

I may add that there is, so far as I can ascertain, no regular supply of these beans as yet established, and it is very possible that several kinds of them are at present mixed together by druggists in order to have enough for the preparation of extracts and tinctures to supply the demand of the market. I can prove that some of the extracts at present sold are different from others. Thus some are entirely soluble in spirit, and others are not; and, what is much more important, some are exceedingly weak in their physiological effects compared with the early and more carefully prepared specimens. This I have proved by experiments on rabbits and others of the lower animals, and I am quite persuaded that the same thing has been sadly shown in my recent experience of the treatment of tetanus in the human subject. For I was in this state of uncertainty and suspicion as to the genuineness of the drug and the strength of its preparations when I was called on in rapid succession to treat the following cases. It will, however, be observed that in them I employed the drug more freely,—using subcutaneous injections whenever there was any difficulty of swallowing, and sometimes employing the crude powder of the bean when it could be swallowed by the patient.

Case 3.—W. S., aged 14, was admitted into the Royal Infirmary on the 16th January, 1869.

On Thursday the 7th instant, patient, while assisting in a slaughter-house, was wounded in the left leg by the horn of an ox. The wound was dressed and the boy remained well till two days before admission, when he complained of stiffness of the jaw. Dr. Dunlop saw him, and recommended him to my care in the infirmary.

January 16. When admitted he had all the symptoms of tetanus, his teeth quite firmly clenched, his chest, belly, and back very rigid, but the limbs free. Pupils rather dilated; pulse 110; bowels confined. He had a drop of croton oil in castor oil, and began the Calabar bean at 8 p.m., taking gr. j. of extract every half-hour for three times, and then gr. j. every hour for the next twelve. At 4 a.m., he had a violent fit of general spasms producing opisthotonos.

January 17. At 10 a.m., his expression was improved, and his muscles were considerably more relaxed than they had been; pulse 88. Patient had vomited a good deal of frothy mucus. He had taken no food except a little milk occasionally. The Calabar bean was continued, and as the bowels had not moved another drop of croton oil was given. At 10 p.m., he was still better, being even more relaxed in his muscles, and the bowels had been freely moved. Has not slept much, and has vomited frequently. Pulse 108, full and soft; gr. j. of extract to be given every two hours, and stimulants to be freely given during night. Tincture of cannabis indica to be given with the bean in ♏xxx doses every four hours, unless patient slept. At 11 p.m. patient was found much relaxed and asleep; mouth could be opened about an inch, but shortly after this time he had a severe fit of general spasms and became very weak. As he could not swallow, brandy in beef-tea was injected into the rectum, and repeated as the patient could bear it, and in one of the injections gr. iij of the extract was administered. Notwithstanding this, at 3 a.m. he had a most violent spasm, and the teeth remained firmly clenched. He swallowed gr. j of the extract in a little whisky and water, but in a quarter of an hour he had another violent fit of spasms, and the muscles of the neck and back remained quite hard. Patient could not swallow, but gr. ij of extract were administered by injection. In about half an hour the mouth could be opened more than an inch, and the muscles generally were quite soft.

January 18. The above-mentioned relaxation continued with only a few twitches; no bean had been given, but stimulants and food as they could be taken; bowels had been twice moved. At 1 p.m. slight occasional spasms occurred, and therefore gr. j of the extract was given *per anum*, and at 2 p.m. patient drank about half a pint of beef-tea, and continued relaxed. At 4.30 p.m. a very violent spasm occurred, and chloroform was tried ineffectually, and, as breathing was long delayed, artificial respiration was attempted with success. Patient remained afterwards more relaxed, though still in parts rigid. At 6 p.m. tincture of cannabis indica and spirit of sal-volatile (♏xx of each) were given in water, and in an hour and a half afterwards gr. j of the extract by the mouth. This was followed by relaxation of the rigid muscles, which continued and was kept up by injections of gr. j of the extract of beef-tea into the rectum until 9 p.m., when during the administration of some brandy and water he seemed to choke and gasp. He then fell into a general fit of spasms, which was never wholly recovered from till he died at 2 a.m.

Although this was from the first a very acute and severe case, yet the influence of the bean was quite marked, and the progress of the case was favourable until a few hours before death. It seems very likely that the brandy and water had irritated the glottis, and thus caused the spasms, which in the state of weakness produced partly by the disease, and no doubt partly by the drug, he was unable to bear. The case teaches two lessons: one, the importance of very skilful and careful nursing in this disease; the other its deceitfulness, and the great uncertainty of the patient's prospects, even when these seem most promising. This is especially true until the disease has passed its acute stage.

Case 4.—R. S., aged 12, was admitted to the Royal Infirmary on the 2nd of April, 1869, with a burn from molten iron on the hips, thighs, and feet.

On the 14th symptoms of tetanus showed themselves, and therefore, the bowels being loose at the time, the tincture of the bean was immediately commenced. He had ♏xxx every hour during the day, and three times he had as much of the solution of muriate of morphia along with it.

April 15th. He was rather better this morning, and the same treatment was continued; soup and whisky and water were given when he could take them.

April 16. Complained of pain in back and neck, and the muscles were hard there. The same treatment was continued, and about midnight he was asleep and relaxed all over. The doses of the bean were only given every three hours to allow patient to sleep.

April 17. Seems more relaxed, but has twitching spasms in diaphragm, and is weaker. About 10 p.m. he was found in a state of prostration, with great sweating, and pupils contracted. He was quite insensible, and breathing was difficult; still the spasms could be excited. Stimulants were given and the bean delayed.

April 18. Patient quite recovered from his state of prostration. He seems much relaxed generally, but slight spasms still occasionally recur. The tincture of the bean and of cannabis indica were given every three hours, but at night the solution of muriate of morphia was repeated at patient's own request.

April 19. Patient in nearly the same state; perhaps a little weaker. The bean and morphia were continued.

April 20. Patient is decidedly weaker to-day, but not worse otherwise; nevertheless in the afternoon he had several severe convulsions without any assignable cause. The bean did not seem to act in time to check them, and the stimulants did not prevent his sinking. He died at two o'clock on the 21st.

I was much disappointed with the result of this case. It seemed to be progressing favourably till the very last day, when it suddenly became worse, and ended fatally. The only way to account for this result is, that the original cause of the disease was a severe burn, and that during its progress a new irritation or excitement of the tetanus may have been caused.

Case 5.—W. M'A., aged 25, was admitted on the 25th June, 1869. A week ago he had his little finger and part of hand crushed, so that the finger had to be amputated. *Symptoms of tetanus* commenced the day before admission, and have progressed very rapidly since, and swallowing is attended with great pain and difficulty. Pulse 112. Bowels have been regular since injury.

A dose of croton oil in castor oil was first given, and then gr. xij of the powder of the bean with ℞xx of tincture of cannabis indica. The bean was repeated every hour, and the Indian hemp every second hour during the night.

June 26. The patient has been much relieved, and can swallow better. His muscles are considerably relaxed, but during the night he had several opisthotonic spasms. He was, however, brought thoroughly under the influence of the bean, and became so sick as to vomit frequently. The severity of the convulsions then diminished, and he drank milk freely, but the twitches were very frequent. They occurred once in every two or three minutes, even when kept quite quiet. The swallowing likewise became less perfect, so that nourishment had to be given by injection into the rectum.

June 27. This morning the patient was thoroughly under the influence of the bean, and his mouth could be easily opened, and the spasms were both slight and infrequent. But in the forenoon he did not get the bean so regularly, owing to his sickness, and consequently the fits became stronger and more frequent. In the evening subcutaneous injection of the tincture was resorted to, and the spasms rapidly diminished again as the influence of the bean gained the ascendency. But from some cause or other he had a very severe fit of spasms about midnight, and it both frightened and pained the patient so greatly that he cried out.

June 28. He complained of pain in his back, but was well under the bean, and greatly relaxed. His spasms were so slight that the medicine was given at longer intervals to-day. During its course, however, he became very unruly, and talked incoherently and wildly about self-destruction. He often tried to strangle himself with his own hands, and when prevented he voluntarily bit his tongue that he might bleed to death. Strange to say, all this time he had no fit of convulsions; but on the 29th, at 5 a. m., when a dose of the bean was being given, he resisting furiously, a violent paroxysm occurred—his chest was completely fixed, and in spite of the efforts made to accomplish artificial respiration, he died in the fit.

In this case, which was carefully watched and treated by my present house-surgeon, Mr. Aikman, I combined anodynes with the bean, and I believe the treatment would have been successful had it not been for the strange suicidal efforts of the patient. These, of course, both weakened him and excited the fits. In his, as in other cases wherever the swallowing was difficult, I had recourse to subcutaneous injections of the tincture of the bean;—not that I fancy there is any less absorptive power in the lining of the stomach in tetanus than in any other disease, but simply to avoid the muscular exertion of the act itself.

Case 6.—J. Q., aged 12, was admitted to the Royal Infirmary on the 23rd July, 1869, with symptoms of tetanus of five days' duration, following a lacerated wound of left hand.

After the bowels had been opened by croton oil, patient was rapidly put under the influence of the Calabar bean. The tincture was at first used along with stimulants, and as soon as the bean took effect all tetanic symptoms disappeared, and the boy slept quietly. But on the morning of the 24th, a new specimen of tincture having been used for some hours, the symptoms reappeared with considerable violence. The powder of the bean was then substituted for the tincture, and used in doses of 10 grains every hour. The result was that during the rest of this day, and also during the 25th, he had almost continuous rest, although occasionally a slight arching of the back might be noticed. This occurred most distinctly about the times when the doses were due.

July 26. About 1 p. m. to-day, the doses having been continued night and day as formerly, deep depression and sickness exhibited themselves. Therefore, lest the powdered bean should have accumulated in the stomach, a purgative dose of rhubarb was administered, and the bean was not given for some hours; but whenever slight spasms began to show themselves the drug was resumed at intervals of two hours.

July 27. Since yesterday he has had no opisthotonos, and only twitches occasionally, but these increase f the bean is not given regularly every two hours. It was noted in this case that the pupils, contrary to all my former experience of this drug, became contracted and remained contracted during the whole period of the action of the bean on the system; so that the repetition of the doses was mainly regulated by the state of the pupil. If this were a constant or even a common phenomenon, it would be an extremely useful guide in giving the bean, but that effect on the pupil is not often seen unless the bean is applied to the eye itself.

July 28. The benefit derived from the bean was by this time so apparent to the boy himself that he frequently called for it.

July 29–31. During these days he remained in much the same state, but taking his food much better and with considerable relish.

August 1. Twice to-day he had a peculiar tremulousness of his hands, but this disappeared on the administration of stimulants. On the 2nd and 3rd various attempts were made to lengthen the intervals of administering the bean, but the stiffness and arching of the back always made it necessary to recur to the drug at the end of the two hours. He continued to masticate his food well and easily.

August 9. Has been sitting up in bed to take his meals, and is altogether better.

August 19. Has had no bean since the morning of the 10th, and continues quite well. He has no spasms, and is running about the ward freely. He will be dismissed cured in a few days.

I cannot conclude the record of this case without stating that I believe its successful result is in a great measure due to the way in which the patient was watched in the early stage of his disease by my house-surgeon and dressers, who took the duty by turns both night and day.

I have thought it right to put these cases in some detail before the profession that they might be judged of independently, and thus assist in settling the question as to the value of the Calabar bean in traumatic tetanus. I fear that this disease is looked on by most surgeons as so utterly hopeless that cases of recovery from it come upon them as agreeable surprises, and they are for that reason led to publish them. But this renders it difficult, or perhaps impossible, to learn anything from the statistics of the subject. There are, however, some interesting data of a statistical kind in our possession regarding tetanus. Thus the late Professor Laurie, 1853, collected from the journals of the Royal Infirmary 50 cases of traumatic tetanus. They were treated in many different ways, and the results were 44 deaths and only 6 recoveries. Of cases previously published he tabulated 171, in which there were 80 deaths and 91 recoveries; but the contrast here makes it obvious that if all the cases from the practices of the surgeons to whom these cases occurred had been published, the result would have been very different.

Dr. Busch tells us that of 21 cases he had 7 recoveries, *i. e.* 33½ per cent., and that Demme had 7 per cent. of recoveries, Blanc 43 per cent., and the surgeons in the American war 7·4 per cent. Still further it is interesting to know that Busch treated 12 cases and Demme 21 with curari, *i. e.* 33 cases with 14 recoveries and 19 deaths.

Again, I have treated 10 cases with the Calabar bean, and had 6 deaths and 4 recoveries. In this summary I omit one other case seen by me just when the patient was dying, and who therefore was not treated at all.—*Practitioner, September*, 1869, *p.* 150.

12.—ON A CASE OF EMPROSTHOTONOS, RESULTING APPARENTLY FROM COLD, SUCCESSFULLY TREATED BY THE SUBCUTANEOUS INJECTION OF THE SOLUTION OF THE EXTRACT OF THE CALABAR BEAN.

By Dr. BERNARD DUFFY, Florence.

[The patient whose case forms the subject of the following article was 35 to 40 years of age. Whilst *suffering* from a cold caught in England three weeks before, he had been exposed, when insufficiently clothed, to the cold wind coming from the Appenines when still covered with snow, in April. Spasmodic pain at the lower part of the sternum, followed by complete rigidity of the intercostal muscles, were the first symptoms of his approaching illness.]

I saw him at about half-past eight on the morning of the 20th. He was sitting on the side of his bed, his head and chest so rigidly bent forwards as to prevent his assuming the erect position, his countenance indicative of extreme distress and anxiety, and the respiration short, frequent, and what the French call *saccadé*. On percussing the chest, a tolerably clear sound was emitted, but auscultation showed that little or no air entered the smaller air-cells of the lungs. The heart's action was hurried, but regular, and free from signs indicating organic lesion. Pulse from 90 to 96. On applying the hand to the chest, the intercostal muscles were found permanently contracted into *hard* lumps, also the recti abdominis, thereby greatly increasing the emprosthotonos, the tendinous intersections being quite evident, while the external oblique was as flat and as hard as a deal board; what respiration there was seemed to be carried on exclusively by the diaphragm. A warm bath was ordered, and while it was being got ready, mustard sinapisms were applied to the insteps, a draught of camphor julep with mindererus spirit and chlorodyne was given, and a camphor liniment with chloroform and atropia rubbed into the chest.

These remedial measures, including the bath, affording but trifling and temporary relief, and the patient beginning to complain of stiffness about the neck with some difficulty in swallowing, though the frontal facial and masseter muscles were yet free, I resolved to lose no further time; and believing that I had to deal with a case of tetanus produced by cold affecting the afferent nerves, and giving rise to exaggeration of the reflex motor function of the spinal centre, I injected, about noon, under the skin of the neck on the right side, one-third of a grain of the extract of Calabar bean dissolved in eighteen minims of water, as recommended by Mr. Thomas R. Fraser, Assistant Professor of Materia Medica at the University of Edinburgh; the solution being previously neutralised with a solution of the carbonate of soda. This injection was repeated every three hours on that day; and nausea, but no other apparent result, supervening after the fourth dose, the injections were suspended for the night, and until the following morning at nine o'clock, from which time they were used steadily every second hour. Nausea, faintness, and perspiration coming on after the fourth dose, they were discontinued; an evident impression having been made by this time on the muscles engaged. After this the tetanic symptoms gradually yielded, so that on the night of the sixth day the patient was enabled, for the first time since the attack, to resume the recumbent position without an aggravation of the spasms.

Purgatives and enemata were administered without effect until the 21st, when the bowels acted freely, with great relief to the patient. On the 22nd, two blisters, each about ten inches long and over an inch wide, were raised, by means of Messrs. Bullen and Burt's blistering fluid, on either side of the dorsal spinous processes.

On the 21st, about midday, the exhaustion was alarming, and then the patient was seen, in consultation with me, by Signor Burci, the late able Professor of Clinical Surgery at the hospital of Santa Maria Nuova, in this city; and, owing to the rarity of the case, and as a further example of the beneficial result of the use of Calabar bean, he suggested that it should be recorded.—*Lancet, July* 3, 1869, *p.* 7.

13.—TREATMENT OF TETANUS BY ACONITE.

Having lately heard the report of a case of tetanus successfully treated by nicotine, administered in small doses by Mr. Morgan, in a traumatic case under his care at Mercer's Hospital, and Dr. Babington, of Londonderry, having reported another in which nicotine was given in larger doses, but owing to its depressing effect had to be given up, and the patient finally did well, it is interesting to find that another powerful agent, the tinct. of aconite has been used also with success, by Prof. Winderlich. As reported in L'Union Médicale, he gives the following:—

Case 1.—A boy, aged fourteen, attacked with traumatic tetanus with opisthotonos, profuse sweat, and miliary eruption; many of the general muscles, particularly of the face affected; severe and frequent convulsions; temperature, nearly natural; and pulse steady. Morphia in full dose was given, and warm baths used. There was but a temporary improvement under this treatment. Ten drops of the tincture of aconite were given four times a day, equal to two grains of aconite. The symptoms improved, the pulse fell below the natural standard, and the temperature normal; recovery soon followed.

Case 2.—A man, delicate and with diseased lungs, suffered from spontaneous tetanus, trismus and opisthotonos, spasmodic contraction of other general muscles; convulsions and abundant miliary eruption and sweat; temperature tensely febrile; pulse a little increased; an intercurrent phenomena did not increase the convulsions, but raised the temperature a little, from 38°5 to 38°6 (centig.), the temperature soon fell to 37°7 (centig.). Morphine was administered by the mouth, and by injections. Chloroform was rubbed over the affected limbs, this produced a temporary alleviation. Five drops of tinct. aconite given three times a day, however, rapidly changed the condition of the patient, who recovered; the temperature being 36°8 to 37°3 (centig.).

Professor Winderlich draws attention to the temperature condition, and the facts that during the period of miliary eruption and sweat the heat was not specially raised, and that the tetanic contractions and spasmodic action of the muscles do not cause the elevation of the temperature, which is so remarkable preceding death by tetanus; as in animals where tetanus is artificially produced. Elevation of temperature is not caused by the violent contractions and muscular action. He is fain to attribute their elevation to the remedies employed in the human subject, for the cure of the disease. In the second case, the heart was normal till pneumonia supervened, and it may be concluded that when the temperature rises some complication has occurred, and that the temperature will form a criterion of the probable issue of the case, if it remains natural or lower than natural it presents the best augury for success.

In three cases of fatal tetanus observed, the temperature never fell to its natural condition.

We recommend these observations for further inquiry. No doubt the two cases referred to by Professor Winderlich were not of the violent and acute character we meet with in our hospitals and occasionally in private practice.

Mr. Morgan's case read before the Surgical Society here rather bears out the temperature observations of Professor Winderlich, as in his patient there was hardly any increase of temperature, though no miliary eruption or sweat had appeared, and what is also interesting, that though a traumatic case, it is not of an intensely acute character, perhaps attributable to early treatment.—*Medical Press and Circular*, *June* 2, 1869, *p.* 461.

14.—CALABAR BEAN IN TETANUS.

In the Glasgow Med. Jour. for May, 1869, Dr. W. Fenwick reports the use of Calabar bean in two cases of acute traumatic tetanus. The first case terminated fatally, but the remedy was not given until the disease was far advanced, and by some mistake, was omitted during one night, though manifest good effects had been produced by it. In the second case, a child aged nine, was ordered two grs. of the powdered bean with ¼ gr. opium every three hours, the symptoms of tetanus having been developed for some days previously. The opium was soon omitted, and 3 grs. of Calabar bean with 3 grs. of rhubarb given every four hours during the day. The improvement following the use of the bean was most marked; thrice it was stopped, with the same result, increase or resumption of spasms; three times it was resumed with the same result, viz.:—cessation of the spasms. The patient altogether took about 300 grs. of the powdered bean, and recovered perfectly.

Dr. Greenleaf (Richmond and Louisville Med. Jour., May, 1869), adds seven cases, collected from various sources, some under his own care, to the twelve already reported by Dr. Fraser, of Edinburgh, illustrating the value of physostigma in the treatment of tetanus. (See Edin. Med. Jour., May, 1869.) Three recovered and four died, so that with Dr. Fraser's cases, we have a total of nineteen cases of tetanus treated with Calabar bean, twelve of which recovered and seven died. Of the seven additional cases, however, related by Dr. Greenleaf, in one case the post mortem examination revealed the presence of a hair-pin imbedded in a wound in the scalp, a persistent source of irritation. If this be excluded, as well as a case of Dr. Watson's in which only one dose of the bean was given, we have a result of *seventeen cases* treated with only *five deaths*, a degree of success that has not been shown to follow the employment of any other remedy. Dr. Greenleaf considers the alcoholic extract of the bean to be the best preparation for use, either by the mouth or hypodermically, giving in the former case from ¾ gr. to 1 gr. every two hours, in the latter ¼ gr. to ⅓ gr. increased as the effect passes off, or as the urgency of the symptoms demands.—*Dublin Quarterly Journal*, *Aug.*, 1869, *p.* 205.

[Our readers may, if interested in this subject, refer back to articles in vols. lviii., pp. 55 and 59, and lvi., p. 48.—Eds.]

15.—PHYSIOLOGICAL AND THERAPEUTICAL EFFECTS OF THE CALABAR BEAN, EMPLOYED IN HYPODERMIC INJECTIONS.

The following note is by M. Bourneville, house-surgeon to the Paris hospitals:—

During the last few years the Calabar bean has been studied with care and employed in several diseases. I have personally instituted some experiments in order to verify certain phenomena and divers therapeutical essays. Among the results which I have obtained I may just mention the following. Every one knows that the Calabar bean, when instilled into the eye, produces a very remarkable contraction of the pupil. Now I have been surprised to observe that, when it is injected under the skin, there ensues, on the contrary, a dilatation of the pupil, or else the ocular diaphragm remains unchanged. In nine cats and one dog the dilatation was well marked and constant. Furthermore, in two cats I observed an unequal dilatation of the pupils. In four frogs the pupils remained unchanged, or seemed slightly dilated. It is not only in animals that this peculiarity, already noticed by Fraser, is to be observed, but also in the human species.

A second point which seems interesting to notice is the antagonism between the Calabar bean and atropine. I have verified this phenomenon in six guinea-pigs. After having injected the bean, atropine was injected. The animal did not succumb when both medicaments were injected in fit proportion; but two or three days afterwards, a dose of the bean equal to that which had been at first employed being injected into the surviving animals, they all died. This obviously shows the antagonistic action of atropine against the Calabar bean.

From a therapeutical point of view, I have prescribed the Calabar bean, taken through the mouth, to epileptic patients in 1866, and by the hypodermic method to (1) a woman of 65 years, having paraplegia with spasmodic contraction; and (2) to a young girl of 18, affected with chorea. In the first case, in which the paraplegia was most probably due to a tumour seated in the spine, and was attended by marked contraction on the left side, I injected, from Dec. 4th to 30th, 1868, from four to thirty milligrammes of the extract of Calabar bean. Notwithstanding the gradually increasing strength of dose, there did not result the slightest amendment. Moreover, the pupils never showed any contraction, but remained after the injections as they were before.

With regard to the choreic patient, who was then in her third attack, I *injected every* other day during three months (from February to April, 1869) from six to eight milligrammes of the extract of the Calabar bean. The symptoms gradually abated without disappearing entirely. Contrary to what has been noticed by Ogle and others, there was no speedy cure in this case. Again, in this case as well as in the former, and in my experiments on animals, either the pupils remained unchanged, or became slightly dilated. If the dose was not increased, it was because the weak dose which I employed had already produced some bad symptoms: restlessness, pallor of the countenance, clammy sweats, lipothymy, slow and small pulse, and, occasionally, bilious vomiting. These facts, besides confirming certain views which have been since then advanced, show that the administration of the Calabar bean by the hypodermic method is possible even now, as has been shown, moreover, by Eben. Watson. The doses above mentioned may, therefore, serve as a guide.—*Lancet*, *Aug.* 14, 1869, *p.* 233.

16.—TREATMENT OF EPILEPSY.

Dr. **Brown-Sequard** states that his usual prescription for epilepsy is as follows:—

Iodide of potassium, one drachm.
Bromide of potassium, one ounce.
Bromide of ammonium, two drachms and a half.
Bicarbonate of potash, two scruples.
Infusion of calumba, six fluid ounces. Mix.

A tea-spoonful of the mixture to be taken before each of the three meals, and three tea-spoonfuls at bed-time, with a little water.

In syphilitic cases he increases the amount of iodide of potassium. In administering the bromides it is necessary to give a relatively larger dose at bed-time, and smaller doses in the day if sleepiness is caused. The medicine should be pushed till anesthesia of the fauces is produced, and an acne-like eruption appears on the face, neck, and shoulders, &c. The bromides should be continued for fifteen or sixteen months after the attacks have ceased. An occasional purgative ought to be given, and if any debility be produced by the use of the bromides, wine and nourishing food should be used, with cod-liver oil, arsenic, strychnia, &c.; and the cold douche or shower bath employed.—*Diagnosis and Treatment of Functional Nervous Affections*, 1868.—*Dublin Quarterly Journal*, *May*, 1869, *p.* 417.

17.—CASE OF EPILEPSY SUCCESSFULLY TREATED WITH ASSAFŒTIDA.

Under the care of Dr. Pollock, at Charing Cross Hospital.

The following case is interesting not less as an example of failure of the bromide of potassium to influence the recurrence of fits described as epileptic in character, than from the successful results attending the use of assafœtida:

C. Y., an unmarried woman, 29 years of age, applied at the hospital in November, 1868, suffering from epileptic fits. She said she had been liable to them since she was nineteen years of age, and that they had been gradually increasing in severity and frequency, usually attacking her once or twice in a fortnight. She loses all consciousness, falls down, struggles violently, bites her tongue and lips, exhibiting, in fact, all the usual phenomena of an epileptic fit, ending with a deep sleep, from which she awakes much exhausted. The attacks come on quite unexpectedly. She has a sallow complexion, and the distressed and anxious look so common in epileptics. Her general health is pretty good, and she menstruates regularly. The case was first treated with bromide of potassium, gradually increasing the dose from fifteen to forty *grains three times* a day, but without the slightest benefit.

Sulphate of zinc, quinine, and tincture of iron were all tried in full doses, but no good result followed. In April last half a drachm of tincture of assafœtida with three grains of carbonate of ammonia was given three times a day, and with a most satisfactory effect. Since the first week that the remedy was tried she has had no return of the fits, though she suffers at times from headache and a feeling as if a fit were coming on. She has her medicine renewed occasionally, and is still under observation.

Dr. Pollock remarks, that if the fits had not been so clearly epileptic (she had one on one occasion while being seen at the hospital), it might be supposed that the case was one of hysteria; but there can be no doubt as to the nature of the disorder, though it is accompanied by some symptoms of a nervous character, which first led to the employment of the assafœtida.

The hint afforded by this case has been taken advantage of, and other cases of epilepsy have been treated with the same drug, but at present without any decided results. It may be worth while, Dr. Pollock suggests, to adopt this mode of treatment in cases where other medicines have been given without affording any relief.—*Lancet, August* 21, 1869, *p.* 267.

18.—ON THE USE OF STRYCHNIA IN CERTAIN FORMS OF EPILEPSY.

By Walter Tyrrell, Esq., Great Malvern.

In a disease like epilepsy, of which the pathology is very obscure, it is satisfactory when we can say that we have established any definite fact, more especially when that fact is one bearing upon treatment. Now that bromide of potassium has a decided effect in relieving certain forms of epilepsy is one such fact; and I wish to point out in this note what I think will be established, on trial, as another fact equally worthy of notice; viz., that other varieties of epilepsy may be cured by strychnia. I do not mean to say that I can point to this or that case, and say it will be cured by strychnia; in our present state of knowledge we are unable to do this with any remedy; but I think I can point to a large class of cases in which the administration of strychnia will be followed in the majority of cases by the most beneficial results. There is a common form of epilepsy in which anæmia and defective nervous control are prominent symptoms. The majority of these patients are women, and with them the disease is apt to commence at or about the time of the first menstruation; and the attacks show a disposition to occur more frequently and with more severity near the catamenial epoch. In the intervals of menstruation, the disease often shows itself irregularly in the form of *petit mal*. In such cases, and in children in whom epilepsy, often commencing with some of the varieties of *petit mal*, gradually passes into the more severe form, this plan of treatment by strychnia is very successful; and there are few cases which are not benefited by a perseverance in its use.

My experience would lead me to believe that large doses are unnecessary; for, although I have carried the dose as high as one-third of a grain twice daily, with benefit, I am now in favour of employing smaller amounts given more frequently. I have been using this remedy now for nearly ten years, and I can certainly show some valuable results. I am now preparing to tabulate the whole of my cases for publication in a collected form.—*British Med. Journal, Aug.* 7, 1869, *p.* 145.

19.—CHOREA: AT FIRST UNILATERAL (LEFT), THEN GENERAL AND SEVERE: GOOD EFFECTS OF STRYCHNIA.

Case under the care of Dr. Murchison, at the Middlesex Hospital.

We are indebted to Mr. H. A. Bale, Resident-Physician's Assistant, for the following notice.

E. B., aged 15, was admitted into the hospital on March 23rd. Her illness began with slight twitchings of the fingers of the left hand a month before admission; these spread to the arm, left side of the body, and face; the right limbs were now slightly affected, but the patient could walk and talk, and slept well; the heart-sounds were normal. She never had rheumatic fever. When admitted, the patient was put on ten grains of bromide of potassium three times a day; this was increased to thirty grains three times a day; but in spite of this, the right side rapidly became as bad as the left. Belladonna and cannabis Indica were successively tried, but without improvement.

On April 7th, the patient was noticed to be unable to sleep, owing to the violence of movements. Pulse 108; temperature 101; skin hot and dry; the pupils dilated; the patient was stupid and heavy; her appetite was bad. Sulphate of zinc was then tried (two grains three times a day), but the patient became worse.

On April 10th, the patient was becoming much exhausted. She was unable to talk, and could only be fed with great difficulty, owing to the violence of the convulsions. She had also great difficulty in swallowing. The back of the body and limbs were sore and much chafed from the constant movement. She had great thirst. She had passed urine in bed for the last two days. She was now ordered six minims of liquor strychniæ in water, to be taken every four hours, and two drachms of brandy every two hours. The improvement was immediately apparent after two or three doses. The pupils became natural; the paroxysms less frequent, shorter, and less violent.

On the 15th, trismus was noted to have quite disappeared. She was taking nourishment freely, and the amount of liquor strychniæ had been increased to thirty-six minims in the twenty-four hours.

On the 18th, there were very slight choreic movements in the limbs and face. She was ordered ten minims of liquor strychniæ every eight hours.

On the 20th, the improvement continued, and the mixture was now ordered every six hours. The amount of strychniæ was gradually increased from this time, until on May 12th she was ordered to take ten minims every four hours; the movements at the same time steadily and at last completely, disappeared. The left arm was left almost paralysed, but rapidly recovered. The mixture was omitted on May 28th; and on June 7th the patient was discharged cured.—*British Med. Journal*, *Aug.* 21, 1869, *p.* 211.

20.—REPORT ON THE TREATMENT OF DELIRIUM TREMENS IN SOME OF THE HOSPITALS OF GREAT BRITAIN.

It is interesting to note in the following report, which gives a fair idea of the state of opinion in the profession on the subject, the great change which has taken place within the last few years in the treatment of delirium tremens. Instead of the heroic doses of opium, which were almost as a matter of course given in cases of this disease, opium is now used only by some physicians, and by them in comparatively small doses; the excessive treatment by alcohol has given way to more moderate measures, and now it is given up altogether, or stimulants are administered in much smaller quantities, while judicious nursing, except on rare occasions, has taken the place of the strait jacket. It is satisfactory to find that all are agreed as to the great importance of abundant nourishment of the best kind, and perfect rest.

Charing Cross Hospital.—Dr. Salter's treatment is sedative, pushed to extremity, aided by stimulants, and, above all things, feeding. The results which he has obtained have been uniformly such as, in his opinion, leave nothing to be desired.

Middlesex Hospital.—Dr. Goodfellow is not inclined, during the early part of the disease, to interfere greatly. His treatment is mainly expectant and dietetic, abundance of nourishing food being allowed. Should the urgent symptoms, however, continue, subcutaneous injections of morphia, from a fourth of a grain upwards, according to circumstances, are given; and stimulants, spirits, or beer, as the case may be. The following mixture Dr. Goodfellow has found frequently of great service:—

℞. Quinæ disulphatis gr. ij; chloroformi ♏ xx; tincturæ cardamomi comp. ʒj. To be taken in water every four or six hours.

If there be much febrile disturbance, a grain of opium, with a grain of calomel, is prescribed.

Dr. Murchison advocates no special rule, his mode of treatment depending upon the individual character of the case. Generally speaking, however, he employs opium, if there be no real affection; but if this be present, he believes tincture of digitalis, in twenty or thirty minim doses, offers considerable advantages. He thinks stimulants in some cases useful, but he by no means employs them in all cases. Nourishing food and quiet are, however, invariably necessary.

St. Bartholomew's Hospital.—Dr. Farre always takes care to get the bowels open at first. He then gives opium; or, if the pupils have any disposition to contract, opium and antimony several times a day. If sleep be not induced by this means, he uses cold affusion to the head. Wine or beer is allowed, if the pulse be low, or the skin perspiring. He has given half-ounce doses of digitalis in several cases without injury, but without marked effect.

St. Thomas's Hospital.—Dr. Peacock has been lately employing bromide of ammonium in delirium tremens with very good results.

Westminster Hospital.—The plan of treatment which, as a rule, Dr. Fincham adopts, is as follows: He cuts off at once all alcoholic stimulants, and administers directly abundance of easily digested and nourishing food—*e.g.*, three pints of strong beef-tea, and one of arrowroot and milk, given in divided quantities every two hours, as in a case of fever. If, by giving one or two pints of porter in the day, he can get food taken more readily, Dr. Fincham allows that quantity. As soon as possible, he urges the patient to take solid food, in the shape of meat, given as regular meals, with porter; continuing, at the same time, beef-tea, &c., in less quantity. Dr. Fincham gives no opium. If, at the commencement of treatment, the patient appear much exhausted, he gives ammonia; but, as a rule, prefers to give, as medicine, hydrochloric acid in some bitter infusion, in order to increase the appetite and assist digestion. If the patient have been drinking hard up to the time of his coming under treatment, Dr. Fincham has found, on several occasions, great and rapid improvement take place after the action of a brisk purgative—*e.g.*, calomel and colocynth, or a drop or two of croton-oil. This must, of course, be followed by the due administration of nutritious food, &c.

Netley Hospital.—The system on which Dr. Maclean goes in the treatment of delirium tremens is, first to secure perfect quiet and seclusion for the patient, placing him under the care of careful and trustworthy attendants, who are instructed to use every means to calm and reassure the sufferer. The dangerous practice of forcing sleep by opiates, he never under any circumstances follows; nor does he allow the blood of a patient already poisoned by alcohol to be still further charged by the use of stimulants. Instead of this, he insists on the administration of strong beef-tea at short intervals, to which Cayenne pepper has been freely added. Without the addition of pepper, the stomach will rarely retain the nourishment. Food is absolutely necessary. A man who has been drinking to such an extent as to bring on this formidable affection, has, nine times out of ten, been eating little or nothing. Dr. Maclean is a great advocate for a darkened room and careful nursing by judicious male attendants. Women cannot restrain patients who, in their terror at the imaginary objects of "horror" by which they are surrounded, are apt to be violent. He regards with well founded disfavour the system of forcing sleep by large doses of morphia, and has seen more than one person die with all the symptoms of narcotic poisoning, who were thus treated.

Aberdeen Royal Infirmary.—Dr. Harvey has long since abandoned the practice of treating delirium tremens with heroic doses of opium, and of using much restraint with the jacket. His treatment of it has been, on the whole, "expectant"—letting the patient alone, giving him plenty of food, and moderate exercise in the ward or out of doors, if in a condition for it. He is inclined, however, to think that, from his knowledge of the *calmative* action *on the nervous system* of bromide of potassium in full doses (twenty to thirty grains repeated daily, at short intervals), this article of the materia medica will be found to prove a valuable remedy in the graver forms of the disease.—*British Medical Journal, July* 3, 1869, *p.* 7.

21.—CASE OF DELIRIUM TREMENS SUCCESSFULLY TREATED BY HYDRATE OF CHLORAL.

By Henry T. Chapman, Esq., London.

[The patient in this case was 60 years of age. On three previous occasions sleep had been procured by morphia, but in the attack which forms the subject of the following article, this had signally failed.]

At 12 on Tuesday night, about five hours after the last ineffectual dose of morphia, having obtained a supply of the hydrate of chloral from Messrs. Squire, of Oxford-street, I gave him gr. xxx. in sweetened water, which was fortunately retained by the stomach. In less than five minutes he was asleep, and slept heavily for nearly an hour, the muttering and convulsive movements ceasing entirely after half an hour. On waking he was quite composed and rational, drank some brandy-and-water, took gr. xx. more of the hydrate, and again fell into a lethargic sleep, which lasted till 8 on Wednesday morning. From that time his health and strength have steadily improved, and he is now (September 27) far advanced towards convalescence.

Few, I think, will be inclined to dispute that, but for the narcotism so rapidly supervening on the administration of the chloral, my patient was fast sinking into a comatose condition, which must have ended in death.

The same good results might very possibly have attended the subcutaneous injection of chloroform or chloral; but I can conceive that it would often prove a difficult matter to carry it into effect in delirium tremens. In the preceding case it would have been simply impossible.

Dr. Richardson's conclusion is, I doubt not, perfectly correct, that the hydrate of chloral will not " practically supersede opium and similar narcotising agents now in medical use." But may it not supply us with a valuable substitute for opium when that has failed, or where other conditions are present which militate against its employment?—*Medical Times and Gazette, Oct.* 2, 1869, *p.* 419.

22.—ON CERTAIN FORMS OF PARALYSIS AND THEIR TREATMENT BY ELECTRICITY.

By Dr. Walter G. Smith, Fellow of the College of Physicians; Assistant Physician to the Adelaide Hospital.

It would far exceed the limits of a short paper to enter upon the discussion of even the principal beneficial results which electricity may be expected to fulfil in medicine, and I shall therefore restrict my observations to the consideration of the restoration of contractility in paralysed muscles, leaving aside for the present any notice of its effects in re-establishing sensibility, in reducing abnormal contractility, or diminishing hyperesthesia, for under these four heads are comprised its real and definite uses to the physician. Paralytic affections appropriately engage our attention first, when we recollect that it was in great measure owing to its successful application in the treatment of these affections that electricity was enabled to gain a permanent place among the resources of therapeutics.

The cases I am about to detail may be grouped into the following classes:—1st, Facial palsy; 2nd, Paralysis from the poison of lead; 3rd, Paralysis from local injury or pressure, whether it be on the nerve or directly upon the muscle; and, 4th, Rheumatic paralysis of the limbs.

Facial Paralysis.—It will be understood that electricity is not indicated in all cases of palsy of the facial muscles, and can only be useless, if not mischievous, in severe *traumatic* cases. For example, a boy (J. Dean), aged five years, a few days before admission into the Adelaide Hospital, under Dr. Barton (March, 1868), had been accidentally thrown carelessly over a soldier's shoulder, and had fallen on his head. He lost a great deal of blood out of the left ear, became feverish and cross, and had several attacks of convulsions at noon each day. Paralysis of the left side of the face gradually supervened, the sense of smell was impaired, as also that of taste on the left side of the tongue. The mouth was considerably distorted, and he was quite unable to close the eye. It was manifest that the paralysis here was beyond the reach of electricity, and a trial on two occasions with the primary or secondary current failed to elicit any decided contractions, except in the lower fibres of the orbicularis palpebrarum.

Electricity is likewise contra-indicated when the paralysis is due to tumours in the cranial cavity, or in the parotid region involving the seventh nerve, or to disease of the temporal bone.

In almost all cases of rheumatic facial paralysis the electro-muscular contractility, at least after some time, is below par on the paralysed side, or may even be abolished altogether; and this is a point of capital importance, for in doubtful cases it will essentially aid us in diagnosing an eccentric facial palsy from one of central origin. In the latter case the muscles respond normally to the electric stimulus, whether faradic or galvanic; and as this form is usually dependent on hemorrhage having taken place, we see how a wrong diagnosis might occasion a serious mistake as to treatment.

The prognosis in rheumatic facial paralysis is generally good, and is guided mainly by reference to the suddenness with which the affection has set in, and its duration, the age of the patient, and the electric excitability of the muscles; for in proportion as this property is preserved will the case be amenable to treatment. Particular attention should be paid to the latter condition in the progress of the case, because if the muscles show little or no signs of returning excitability we may fear that the disease will prove very stubborn, if not incurable.

In tolerably recent, or even in old cases, though the reaction towards the faradic current is diminished or lost, the reaction towards galvanic stimulation may be heightened.

Though, as is but natural, our treatment is most likely to be crowned with success in cases of recent date, yet instances have been recorded of a cure, or at least notable improvement, having been effected when the disease had continued for eight, twelve, or even fourteen years, and this would warrant us in not pronouncing any case hopeless merely on the ground of its duration. As part of the treatment, it is a common practice to apply small blisters in the neighbourhood of the ear or in the tract of the affected nerve; but I do not remember ever having seen any good result from such means, while the time thus lost may be most prejudicial towards recovery, and I am convinced that electricity will prove the must prompt and trustworthy means of treating this affection.

While admitting that the use of an interrupted *galvanic current* (from a constant battery), *i. e.*, galvanization is necessary in some cases where faradisation fails to elicit contractions in the paralysed muscles, in the majority of cases the most suitable form of electricity is the primary current (*i. e.*, the current from the inner or thick and shorter spiral of an induction machine) applied locally, by means of pointed conductors tipped with moist leather, by direct or indirect faradisation. The secondary current (*i. e.*, the current from the outer or finer and longer spiral), causes much more pain on account of the greater intensity of the current, and the skin of the face, especially in the middle line is acutely sensitive to electric stimulation. Sometimes only a certain number of the muscles are engaged, and even in the return to their normal state they recover with different degrees of rapidity, and hence we see the importance of directing the faradic treatment to the individual muscles. Stimulation of the muscles which have regained their proper contractility should be avoided, lest any tendency to subsequent contraction should be fostered, and, as a rule, the sittings should be short, and the use of strong *currents dispensed with.*

Facial paralysis illustrates well that local palsies not dependent on central causes or on direct interruption of nervous continuity, are commonly amenable to electricity.

Paralysis from Lead Poisoning.—The cause in these cases is usually sufficiently manifest, but as the patient may not be aware of the channel by which lead has entered the system, in all cases of local paralysis of the limbs, with diminished excitability of the muscles, strict investigation should be made as to the possibility of the unsuspected presence of lead, *e. g.*, tailors may be contaminated by holding between their teeth the measuring tape, which has been coated with an enamel of white lead ; silk thread is occasionally adulterated with sulphide of lead (produced by steeping the thread in acetate of lead, and then exposing it to sulphuretted hydrogen), and persons have been poisoned by using flour that had been ground by millstones in which some hollows were filled up with lead.

The cases I shall presently instance are all examples of paralysis of the upper extremities, saturnine paralysis of the lower extremities being comparatively unfrequent.

The middle portion of the common extensor seems generally to be first engaged, the affection gradually extending to the other extensors of the fingers and wrist, and implicating the special palmar muscles, except the interossei and lumbricales, for it is important to observe that the interossei and lumbricales seldom suffer from the poison of lead. This remarkable exemption of those particular fasciculi explains why it is that if the first phalanges be supported the patient will be able easily to extend the second and third phalanges, while he is quite incompetent to do so when the hand is let hang freely. Electro-muscular inquiry has shown that the extensor communis extends the first joint *only*, and is powerless to raise the second and third, but the extension of these latter is effected by the interossei and lumbricales, which at the same time flex the first phalanx, and consequently, if the metacarpal phalanx of the fingers be fixed, these small muscles can act independently, and are capable of moving the fingers with facility. If the fingers be flexed into the palm, and an attempt be made to extend the ring finger alone, it will be found impossible to extend the first phalanx of it without moving the adjacent digits, on account of the connecting processes which pass from its common extensor tendon to those of the middle and little fingers, but the extension of the two further joints of that finger can be quite easily accomplished, the other fingers remaining flexed, because the interossei and lumbricales act independently of the common extensor.

The electro-muscular contractility is usually diminished, and often entirely lost, and in severe cases there is marked atrophy of the tissues, but there is no constant proportion observed between these conditions, or between the amount of atrophy and the degree of paralysis. The electric sensibility is generally lessened, but often partially relaxed.—(Benedikt.)

This diminished motor reaction is of value diagnostically, for the paralysis is not necessarily preceded by constitutional symptoms, which would render its recognition easy, and conversely " when the muscles of a paralytic limb move well under the influence of the electric current, we may fairly conclude that there is no lead in the system."—(Althaus.)

In two cases I observed that the susurrus of the excited muscles was interrupted and crepitant.

Since the larger muscles on the forearm are those chiefly impaired in function, faradisation is best directed to the muscles by moist sponge electrodes, which cover some extent of surface, but it is to be remembered that too large a sponge offers very considerable resistance to the passage of the current. When it is desirable to act on particular muscles or on small surfaces, such as the thenar and hypothenar prominences, the small conical electrodes should be employed to ensure the proper localisation of the current; and in some cases, where the usual method of faradisation was insufficient to evoke muscular contractions, I have resorted to electro-puncture with success. This latter method is, of course, far more painful, and requires the intensity of the current to be cautiously adjusted.

We may, I think, congratulate ourselves on the more generally recognised value of a precise electric treatment in this malady since 1857, when Sir T. Watson could only say that "for helping to restore to the damaged muscles their lost power, electricity has been thought useful, applied in the way of sparks at first and of slight shocks afterwards, along the muscular parts of the extensors of the fingers. In the electro-magnetic apparatus he adds, we have a more accessible and probably a not less efficacious means of furnishing the requisite stimulus."—(*Lectures*, 4th edit., ii., p. 511.)

Case 1.—A house painter (J. Kane), aged 26, of a robust frame, and temperate, but a heavy smoker, was admitted into the Meath hospital in October, 1863. He had been at his employment for about eighteen years. Five years ago he had an attack of colic, and within the last two or three years has suffered from several similar attacks, and he is at present labouring under a severe one. About a week ago, he detected quiverings in the right arm, and this was soon followed by gradually increasing loss of power, especially in the ball of the thumb, which, indeed, has never been quite strong since the first invasion of colic. Partial drop-wrist of the left hand existed, and there was advanced atrophy of the palmar and extensor muscles of the right limb. Local faradisation of the muscles was commenced on the 28th October, and in *five weeks* the arms were perfectly strong, and extension of the wrists nearly restored. The contractility of the extensors of the fingers and wrists of both arms was completely abolished, and transient muscular tremors followed the first application of electricity to the right arm, while evident marks of improvement were afforded after one or two days' treatment.

Case 2.—A man (P. Joyce), aged 44, was admitted into the Meath Hospital in December, 1864. A painter by trade; for thirty-five years he never had any saturnine symptoms, till an attack of colic three months previously. Both arms are now weakened, even as high as the shoulder muscles, and the ball of the right thumb in particular is atrophied. On the 4th of January, faradisation was resorted to, and a decided improvement set in after a few days, and the muscles rapidly gained in contractile power. In three weeks his arms were very much stronger, but unfortunately I have no further notes of the case.

Case 3.—In May, 1866, a robust man (William Sheffield), aged 56, was taken into Sir P. Dun's hospital. For the last forty years he has been engaged in painting, papering, or colour-grinding, and has had colic twice before his present illness, which dates back nearly two months. Both arms, and especially the right, are partially paralysed, but there is not complete drop-wrist, and no turning in of the hand. On the 12th of May I commenced faradisation, and readily obtained contractions without causing pain. Very soon improvement was perceptible, and the atrophied muscles of the right thumb resumed their normal bulk and firmness, and his writing became legible. This progressive improvement continued, and in about *three weeks* he left hospital by his own wish, having nearly recovered the full use of his hands. He was cautioned against resuming work too soon, but was obliged to do so, and in Oct., 1867, he applied for admission into the Adelaide Hospital under Dr. Head. A fortnight after leaving Sir P. Dun's Hospital, he resumed work as usual, and improved steadily, while so engaged, till about three weeks ago he began to suffer from pain and tenderness along the tibiæ, and his general health declined. Soon the ring and little fingers of the right hand lost their strength, and within the last week the debility and muscular wasting have rapidly increased. Tremors in the muscles of the legs have come on, and spasmodic startings are observable in the lips, eyebrows, &c., while the muscles generally are easily excited to reflex action. No colicky symptoms at present. A moderately tight ligature applied on either thigh completely checks the tremulous movements in that limb, and on tickling the skin of the leg no reflex movements occur in it, but powerful ones in the *opposite* lower extremity.

Muscular faradisation was commenced on the 13th of Nov., and regularly continued. The atrophied muscles soon showed evidence of increased nutrition, and in *one* month he left hospital, having nearly regained the full use of *his fingers.*

In conclusion, the general principles of muscular faradisation may be thus summed up:—

1. The current should be directed *locally* to the diseased part.
2. The not obtaining visible contraction at once does not warrant us in neglecting to proceed with the electric treatment.
3. *Indirect* faradisation (*i. e.*, where one electrode is placed over the trunk of the nerve) is generally preferable to *direct* faradisation (*i. e.*, where both poles are placed upon the muscle).
4. The use of painful currents is to be discountenanced, and in no case should a feeling of fatigue be induced in the muscles.
5. The difference in the effect of the same electrical stimulus on different muscles is not due to any inherent variations in their electrical sensibility, but simply to physical and anatomical considerations, such as the thickness of the skin and subcutaneous tissues, and the copiousness of the motor-nerve supply of the muscles.
6. In order to lessen the resistance of the epidermis as much as possible, the skin underneath the electrodes should be kept thoroughly moist with salt water, and since *liquids* conduct better when warm than when cold, tepid water should be preferred.
7. To produce contraction of *individual* muscles the small pointed electrode should be connected with the cathode or negative pole of the apparatus, and be placed *firmly* on the skin at the "motor points," or "points of election" (*i. e.*, the points of entrance of the motor-nerves into the muscles).—*Dublin Quart. Journal, Aug.*, 1869, *p.* 55.

23.—ON LOCOMOTOR ATAXY.

By Dr. J. Lockhart Clarke, F. R. S., &c.

The curious disease known by the name of locomotor ataxy is very imperfectly understood even by those who have had many opportunities of observing it. A great number of practitioners have never seen a case, or at least have not diagnosed it when they have seen one. It is not uncommon to find locomotor ataxy mistaken for some form of cerebral or spinal paralysis, and cerebral or spinal paralysis mistaken for locomotor ataxy. The pathological physiology of this disease is not well understood even by those who are more expert in its diagnosis; while specimens of its morbid anatomy have been seen only by a very few British practitioners, since I believe I am the only person in this country who has made it a subject of investigation.

For these reasons I thought that, while practitioners from all parts of the kingdom are now met together, it would not be uninteresting to select, and illustrate by specimens of morbid anatomy, two cases of locomotor ataxy, one of which presents all the symptoms characteristic of the disease, while the other is wanting in some of those symptoms, and therefore might be, to the inexperienced, a subject of difficult diagnosis. I shall not, however, now dwell on the different diagnosis of the disease. Those who wish for further information on this point, I may refer to the writings of our distinguished visitor, Dr. Duchenne de Boulogne, whose name is identified with this disease, and to my own article on locomotor ataxy in the first volume of St. George's Hospital Reports. But, before I read the cases which I have selected, it may be well to give the briefest possible outline of the symptoms and course of the malady.

In a great number of instances, the first symptoms make their appearance in the form of strabismus, with diplopia, which may disappear for a time and then return; or in the form of amblyopia or weakness of sight, which may go on to complete amaurosis. After a variable period, these symptoms are accompanied by so-called "rheumatic" and lancinating pains, which occur at variable intervals, in different parts of the limbs. In many cases the ocular disturbances, *except perhaps extreme* contraction of one or both pupils, never *make their appearance; the pains*, which may extend over months or even *years, accompanied by some* weakness, being the first in the train of symptoms.

Either at the same time, or subsequently, there is commonly more or less numbness in the feet and legs, in the hands and arms, and sometimes in the face. Sooner or later, the patient begins to find that he cannot properly maintain his balance; that he totters in walking, like a man partly intoxicated, or that he cannot guide the movements of his fingers. He has lost to a certain extent, the power of controlling the action of some of his voluntary muscles. Still later, the voluntary movements become more or less jerking or spasmodic; and in the course of the disease other symptoms supervene, as incontinence of urine and dysuria, which frequently alternate in the same patient; loss of control over the sphincter ani; generally, though not always, loss of sexual power and desire; occasional hyperæsthesia over certain parts of the limbs; and sensations of tightness around the body and limbs. In rare cases, of which I have seen two, the senses of smell and taste are impaired. Usually, the patient's general health is not much affected, and his intellect remains unimpaired. Locomotor ataxy is a disease which occurs more frequently about the middle period of life, and is much more common in men than in women.

Morbid Anatomy.—The morbid anatomy of locomotor ataxy consists chiefly of a certain grey degeneration and disintegration of the posterior columns of the spinal cord, of the posterior roots of the spinal nerves, of the posterior grey substance or cornua, and sometimes of the cerebral nerves. A variable number, and frequently, in the latter stages of the disease, nearly all the nerve fibres of the posterior columns and posterior roots fall into a state of granular disintegration, and ultimately disappear. Usually, the posterior columns retain their normal size and shape in consequence of hypertrophy of connective tissue, which replaces the lost fibres. In this tissue, at wide but variable intervals, lie imbedded the remaining nerve-fibres, with the *débris* of their neighbours, in different stages of disintegration. In some places they are severed into short portions, or into rows of globular masses, formed out of their medullary sheaths, or white substance, which has been stripped from their axis-cylinders. In other places they have fallen into smaller fragments and granules, which either lie aggregated in the line of the original fibres, or are scattered at irregular distances. Corpora amylacea are usually abundant, and oil globules of different sizes are frequently interspersed among them, and collected into groups of variable shape and size around blood-vessels of the part. I am inclined to believe, from my own investigations, that, in the course of the disease, the posterior cornua of grey substance are *always* more or less affected, as I have elsewhere pointed out; and it appears to me to be a question whether they are not the first parts, or at least amongst the first parts, that are morbidly changed. I have also shown, and will show you to-day, that in some cases the deeper central parts of the grey substance are more or less injured by areas of disintegration. These latter lesions, however, are not essential to the production of locomotor ataxy, the peculiar symptoms of which depend solely on lesions of the posterior columns, of the posterior nerve-roots, and probably of the posterior cornua. The cases in which they occur may be considered as mixed cases, partaking of the nature of locomotor ataxy and common spinal paralysis.—*British Medical Journal, July* 3, 1869, *p.* 4.

DISEASES OF THE ORGANS OF CIRCULATION.

24.—CASES ILLUSTRATING THE INFLUENCE OF CONVECTION IN DETERMINING THE SEAT OF CARDIAC MURMURS.

By Dr. Hyde Salter, F. R. S., Physician to Charing-Cross Hospital.

[We now and then meet with cases in which the ordinary ideas we have as to the point of greatest intensity of cardiac murmurs would lead us wrong in their diagnosis.]

The fact is, the localisation of cardiac murmurs is commonly regarded as determined by one agency, *conduction;* whereas in reality it is determined *by two agencies, conduction* and *convection;* and where the principle of convection determines it we should be utterly foiled in endeavouring to explain what we find on the principal of conduction, and should run, by relying on this principle alone, great risk of falling into serious error.

Now let me just explain to you the difference between conduction and convection, and then you will see how differently they would localise the same sound, arising at the same point within the heart. The conduction of sound is, as you know, its transmission by the vibration of the particles of the conducting medium: but these particles do not change their place; the waves of vibration or undulation pass through them (are indeed effected by them), but the particles remain where they were before. The convection of sound, on the other hand, is its transference from one place to another by and through the movement of the conveying medium. Conduction depends on atomic movement; convection on movement in mass. Conduction, the medium being the same throughout, is the same in all directions; convection takes place only in one direction, the direction, namely, in which the medium is moving. Conduction may be effected by solids and fluids alike; convection only by fluids, or by solids suspended in fluids, so as to have free movement. As an example of conduction, I may instance the sound heard on applying the ear to one end of a piece of timber when the other is scratched by a pin; as an example of convection, the sound of distant bells wafted by the wind. Sometimes conduction and convection act in concert, sometimes in opposition; in the one instance convection greatly aids conduction, in the other it tends to neutralise it. As an illustration of this I may recur to the example which I have just instanced—the effect of wind in conveying the sound of bells. If the air is calm the sound is conveyed equally in all directions; but if there is a strong wind it is heard much farther in the direction in which the wind is blowing; while in the direction *from* which it is blowing it will be inaudible at a very short distance.

I think this explanation will be sufficient to make intelligible to you what I mean by the convection of sound. You see it is necessary, first, that the particles of the fluid should be in a state of sonorous undulation, and then that the whole body of the fluid should be in motion, whereby the direction in which these undulations shall be propagated is determined.

Let us now apply these principles to the elucidation of certain phenomena which we discover in the auscultation of cardiac murmurs.

In cases of valvular disease of the heart we have all the conditions necessary for the convection of sound. In the healthy state of the heart we have not. In health the blood only moves one way—forwards; and its forward movement appears to generate no sound; both the sounds of the heart coincide with and depend on the closure of orifices (and therefore with the cessation of blood-movement) at the point where they are generated;—where the blood is moving there is no sound, and where the sound is produced there is no blood-movement. But in disease, such as to generate cardiac murmurs, the conditions of health are abrogated in both these particulars; for, in the first place, the blood, in passing through the orifices, is thrown into sonorous vibrations; and, in the second place, it often moves both ways—backwards as well as forwards. Thus the vibrations of which the blood is the vehicle may be transmitted either in the one direction or the other, according to which way it is passing through the orifice at the time the murmur is generated. So that we frequently see in heart-disease a manifestation of departure from health in two ways—a development of vibrations that ought not to exist, and an alternative of directions in which these vibrations shall be carried.

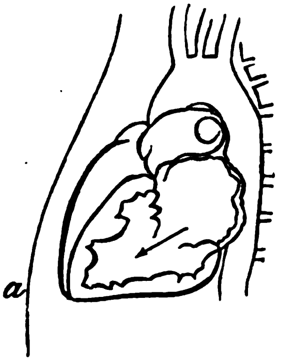
Case 1.—The first case to which I will direct your attention, in illustration of what I have just said, is that of James W., a stout, strong, healthy-looking young man, but with a slightly puffed and bloated face, 19 years of age, and by occupation a farm labourer. He was quite well up to five years ago, when, being 14 years of age, he had rheumatic fever. He was laid up with it a month, immovable in bed, and during his attack suffered from pain in his chest, shortness of breath, and palpitation. From that time he was unable to get about as quickly as he did before, on account of shortness of his breath and beating of his heart. He did his farm-work, however, without inconvenience till two years ago, when he began to be seized, on making any violent exertion, or walking fast, with a pain in the left breast, left shoulder, arm, and hand, and left leg down to the knee. The pain obliged him to stop whatever he might be doing, and then, after he had stood still or sat down for five minutes, it would pass off and he would resume his work. In a quarter of an hour, perhaps, he would be seized again, and again have to stop; and so he would go on all day. The paroxysms of pain were always on the left side of the body, but shooting sometimes a little to the right of the upper sternum; they were accompanied with a sensation of faintness and sickness, a fluttering beating of the heart, and a feeling that if he did not stand still he should drop. The attacks of palpitation would sometimes seize him when he was still, but unaccompanied with the other symptoms. In this way he went on, getting worse and worse, and less and less able to do his work, till nine weeks ago (three weeks before he came into the hospital), when he found he could not continue the struggle any longer, and finally gave up. On admission his state was found to correspond with his description, his breath and pulse being much accelerated by any exertion: when at rest I found them to be 28 and 112 respectively; pulse very small, but regular.

Physical examination.—On exposing the chest a great prominence and bulging of the left side is conspicuous, involving the whole precordial region, and extending even beyond it; it affects chiefly the cartilages of the fourth, fifth, sixth, and seventh ribs on the left side. Over the whole seat of this bulging the heart is seen beating with a heaving action, and even down into the epigastrium, and along into the left hypochondrium. The precordial dulness is commensurately extended, across considerably to the right of the lower sternum, well down into the epigastrium, and even below the margin of the left false ribs. The apex beat is a good inch lower than natural. At the base the second sound is a little indistinct, but the first sound does not seem to be modified. At the apex a grinding bruit is heard, *immediately preceding an apparently natural first sound*, and terminated by it. On working back well into the axilla, and not until the axilla is quite reached, a *systolic* murmur begins to reveal itself, increasing in distinctness as you work round to the back, where it is loud and strong. It is audible over the whole of the left side of the back. On returning again to the front, to the region of the apex, it is quite lost, and the pre-systolic bruit is again heard.

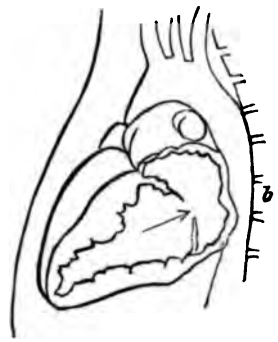
Here we have two murmurs, both of them undoubtedly generated at the same orifice,—both of them mitral,—but which, though originating at the same point, are conveyed to the chest-wall in such different directions, that not only do their points of maximum intensity differ, but there is not any one point in the chest where they are both of them audible: At the apex, where you hear the pre-systolic sound you cannot hear the systolic, and when you have moved within the range of the systolic, you have lost the pre-systolic. So that although the mitral orifice is the seat of a double murmur there is no one point in the chest's surface where it does not appear to be single. Now on the principle of *conduction* this would be inexplicable. Starting from the same point both the murmurs ought to be equally, or at least proportionately, audible at any point of the surface of the chest; where you hear the one you should also hear the other. But on the principle of *convection* the thing becomes immediately intelligible. At the time of the pre-systolic murmur the blood is rushing forwards through the mitral orifice towards the apex, and carries the murmur thither; at the time of the systolic murmur the blood is rushing back through the mitral orifice into the auricle, and carries the murmur thither. And not only does the blood-stream carry the vibrations in these respective directions at these respective times, but prevents that conduction of them in the opposite direction which would otherwise take place: the blood rushing forward just before the systole prevents the pre-systolic murmur being heard behind, while the blood rushing backwards *at* the systole prevents the systolic murmur being heard in front; just as a high wind prevents the sound of bells being heard at a distance to windward, at which, if the air was calm, it would be perfectly audible.

Your comprehension of the different direction that mitral murmurs take, according as they are systolic or pre-systolic—regurgitant or obstructive,—may be facilitated by reference to this diagram, which I have altered from a sketch kindly lent me by Dr. Sibson, and for the accuracy of which, therefore, at least as far as the original is concerned, I need not vouch. It represents a lateral view of the heart, seen from the left, the left chambers, auricle and ventricle, being opened by an imaginary antero-posterior section through them, including the auriculo-ventricular orifice and valve. The anterior border is that of the right ventricle; the truncated vessel springing from it above, the pulmonary artery; above that again you see the arch of the aorta, and behind the descending aorta are indicated the bodies of the vertebræ with which the vessel is in contact. A represents the period of the pre-systole—that is, the moment when the auricle is just contracting to distend the ventricle with its last blood; B represents the period of the systole, or contraction of the ventricle. The valves in both cases are imagined so diseased as to offer obstruction in the one instance, and permit reflux in the other. The arrows indicate the course of the blood-stream at the respective periods. In Fig. A you see the direction of the blood-stream at the moment that a pre-systolic murmur would be produced; that it is downwards and forwards, and that by it the sound would be carried directly to the heart's apex, and therefore have its maximum intensity at *a*. In Fig. B you see the direction of the blood-stream at the moment a systolic murmur would be produced; that it is backwards, and that by it the sound would be carried into the auricle, and therefore be audible at *b*, in the neighbourhood of the spine and left scapula.

A



B



I do not know that I ever met with a case before in which a mitral regurgitant murmur appeared to be absolutely inaudible at the apex; and in this respect the case is remarkable. But I have habitually met with cases, and pointed them out to you, in which such a murmur is very feeble at the apex, and much clearer and louder in the direction of the axilla; and I am sure it is a mistake to make the apex, as is commonly done in books, the seat of the maximum intensity of mitral systolic murmurs. I would go so far as to say, that in my experience the true apex is never the seat of *maximum intensity* of mitral systolic murmurs; that I have never met with one in which the sound did not come out clearer on leaving the apex, and passing to the axillary side of it. Dr. Walshe states that such murmurs may be "audible, or not, round the lateral base of the chest from the cardiac to the scapular region." As far as my memory serves me, I have never met with one that was not so audible. Nor do I believe with Dr. Sibson, that the reason why the murmur *appears* louder as you pass to the left of the apex is, that in this direction you lose the normal element of the first sound, but retain the murmur, which, therefore, is better heard, but is not really louder. I believe the murmur itself is louder, often much louder; and I am sure that you will bear me out in this, from many cases that I have pointed out to you.

But this is a very different thing from a mitral systolic murmur being *absolutely inaudible* at the apex. Whether this inaudibleness was apparent and not real—whether there was a faint murmur at the apex during the systole, but so feeble as to be completely masked by the loud pre-systolic murmur that immediately preceded it; or whether, if there was no sound whatever, its absence was due to the small amount of blood in the ventricle, in consequence of the mitral constriction which the pre-systolic sound indicated, I will not say.

This case proves another point: it proves that a valve sufficiently imperfect to allow regurgitation, and give rise to a considerable regurgitant murmur, may nevertheless close sufficiently sharply and completely to generate a natural first sound; for at the apex the pre-systolic murmur was heard "immediately preceding an *apparently natural* first sound," although on working round to the axilla and back, undoubted evidence of mitral regurgitation revealed itself. The mere fact, therefore, that in certain situations either of the cardiac sounds has a natural character cannot be taken as safe and sufficient evidence that the valve-closure which gives rise to that sound is complete, and that there is no reflux.

And it proves yet another point: that sounds generated by blood-friction and sounds generated by valve-tension are not conducted by the same means or media. Between the valve and the wall of the ventricle there is direct continuity of structure, and therefore the natural element of the first sound, due to the sudden tension and shock of the valve, is conveyed by the ventricular wall to the apex. Not so the murmur—the blood is the seat of that, not the valve; and as the blood is the seat of it, so is the blood the vehicle of it; and since all the blood that is the seat of it passes back into the auricle, thither, and thither alone, is the sound conveyed. And I hold that (in this case at least) the absence of any portion of the systolic murmur at the apex is a proof that no vibrations of the valve were concerned in its production, for if they had been, what was to prevent their conduction to the apex in the same way as the tension-sound?

[In a note to the editor of the Lancet, Dr. Salter writes in reference to the above:]

In my lecture a passage occurs which so erroneously represents what I meant to convey, and is so open to misconception, that I would beg to be allowed to say a word or two in correction of it. The passage I refer to occurs in the last paragraph, and is as follows:—"Between the valve and the wall of the ventricle there is direct continuity of structure, and therefore the natural element of the first sound, due to the sudden tension and shock of the valve, is conveyed by the ventricular wall to the apex. Not so the murmur—the blood is the seat of that, not the valve; and as the blood is the seat of it, so is the blood the vehicle of it; and since all the blood that is the seat of it passes back into the auricle, thither, and thither alone, is the sound conveyed."

Now it might be inferred from this that I was of opinion that a mitral regurgitant murmur was inaudible at the apex—an opinion that would be in contradiction of one of the most evident and undisputed facts in auscultation. What I meant to say was, that the backward current of the blood at the time a mitral systolic murmur is generated is the reason why that murmur is heard at the back, and must have been the reason, *in the case under discussion*, why the murmur was not heard at the apex at all. As an expression of a general fact, the words "and thither alone," ought to have been left out. Every day's clinical observation tells us that, as a rule, a large proportion of the murmur in mitral regurgitation is conveyed to the apex by conduction.—*Lancet, July* 24 *and* 31, 1869, *pp.* 113, 189.

DISEASES OF THE ORGANS OF RESPIRATION.

25.—THERMOMETRIC OBSERVATIONS ON PNEUMONIA.

By Dr. Thomas Wrigley Grimshaw, Lecturer on Materia Medica in Steevens' Hospital, Dublin.

Perhaps there is no local disease, the febrile symptoms of which so closely resemble those of the specific fevers as pneumonia. Indeed the invasion of this disease resembles so much that of typhus, that it is frequently mistaken for it in its earlier stages, and many cases are sent to fever hospitals as cases of specific fevers. Thus, in the year 1866 the total number of cases admitted into the London Fever Hospital (Liverpool-road) was 3,577; of these 590 were cases which had been sent to the hospital by mistake for specific fever; out of these 120, or about exactly one-fifth, were cases of pneumonia.

Again, in Glasgow, in the year 1865–66, there were admitted into the City of Glasgow Fever Hospital 1,318 cases, 64 of which were not specific fevers, and of these 64 cases 27 were pneumonia. Out of 547 cases in 1866–67, 37 were not specific fever, and of these 15 were pneumonia. In 1867–68, out of 969 cases admitted, 45 were not specific fevers, and of these 15 also were pneumonia.

We thus see that in the two largest cities in the kingdom a large number of pneumonia cases are annually mistaken for fever (usually typhus) and sent into hospital. I have not had time to examine the statistics of the Dublin Fever Hospitals; but of Cork-street I can state that the number of pneumonia cases sent in there in mistake for typhus is considerable. What is the cause of these mistakes, and why is it that a large number of cases of inflammation of the lungs are annually subjected by mistake to the risk of taking fever in our fever hospitals? The answer is simply this:—A medical man accustomed to attend the poor in their own houses is called to a patient, finds them with quick pulse, high temperature, furred tongue, and all the symptoms of commencing typhus, probably the patient says he has been longer ill than he has, and does not mention anything particular about his chest, and the medical man, consulting the interest of the patient, at once (on seeing such intense febrile symptoms) sends him to a fever hospital in order that no time may be lost in placing such a severe case in the most favourable condition for recovery. The error here is owing to the close resemblance between the febrile symptoms of pneumonia and those of typhus. This close resemblance makes the symptoms of these cases specially worthy of investigation. The chief and essential condition of fever is increased temperature; therefore when inquiring into the course a fever follows, and the variations it passes through, it is really the variation of temperature which most concerns us. The high temperature of the skin in pneumonia patients is a matter of everyday observation, but accurate thermometric observations upon them have not been plentifully recorded. Dr. Addison remarks on this high temperature, and says:—"But of all the symptoms of pneumonia, the most constant and conclusive, in a diagnostic point of view, is a pungent heat of surface; by this symptom alone the first stage of pneumonia may, in most instances be easily recognized, and by this symptom alone I have repeatedly pronounced the existence of pneumonia, before asking a single question or making the slightest stethoscopic examination of the chest. The presence of this symptom has scarcely ever yet deceived me in the most complicated forms of inflammation within the chest." Dr. Addison also remarks:—"Notwithstanding its close resemblance to an attack of continued fever—a resemblance so great that even the stethoscopist is thrown off his guard—attentive observations will, in most cases, enable us to recognise the difference."

Dr. Walsh quotes Addison, and also refers to the high temperature in this disease, and states that he has himself observed a temperature of 106°.

Since the clinical use of the thermometer has become more general than it was in the days of Addison, less attention has been paid to the thermometry of pneumonia, than of other acute diseases; nevertheless numerous and very accurate observations have been taken in this disease by the late Dr. Warter and by Dr. Compton. To these and to the observations of others, I now propose to add my own experience, believing that true results can be arrived at only by comparing the aggregate results of numerous observers.

First, let us consider the observation of others; Dr. Warter says:—"The temperatures seem to me to rise to a considerable height at once, for in the only case in which I tried it on the 1st day, the thermometer rose to 102°·8, rising gradually . . . seems to attain its greatest elevation on the 4th, 5th, and 6th days . . . the 4th being the most common. On this date, temperatures of 104° and 105° are to be met with, and . . . after this the temperature falls pretty rapidly *together with* the pulse . . . Should the declining temperature of a case of pneumonia take a fresh rise, some new strip of pleurisy or pneumonia may be stated almost positively to exist. Contrary to what we might expect, double pneumonia does not seem to cause more febrile disturbance, as far as the curve of temperature is concerned, than by inflammation of one lung. The most fatal cases of pneumonia are certainly not those where the temperature ranges highest. . . . I have taken normal temperatures where there has been bronchial breathing and mixed crepitation from top to bottom in one lung, and when the other was partially involved. Dr. Warter gives the following:—

Day.	Temperature.
3	103°·75
4	104°
5	103°
6	102°·8
7	100°
8	99°
9	98°

Dr. Compton does not refer particularly to pneumonia, but gives the following range of temperature for that disease, taken from a female, aged sixteen:—

Day.	Temperature.
2	103°
3	104°·75
4	104°
5	104°·5
6	98°·8
7	98°·5
8	96°

The highest point, it will be observed, is 104°·75.

The following range of temperature is given by Dr. Parkes:—

Day.	Respiration.	Pulse.	Temperature.
3	36	108	103°·6
4	36	107	103°·9
5	43	106	103°·4
6	38	93	100°·6
7	30	86	98°·6
8	31	76	98°·5

where no treatment was employed but a few leeches. I only give the mean temperature for each day, from which it will be seen that the highest mean was reached on the fourth day.

I have now to add the experience of another observer, before I detail the results of my own observations. Since the greater portion of the materials for this paper were arranged and the most of it committed to writing, an important paper by Dr. Maclagan, of Dundee, on the thermometric range in pneumonia has been published in the current number (February, 1869) of the Edinburgh Medical Journal. This article escaped my notice until a week ago, and owing to its vague title, "Thermometrical Observations," I did not, when I first noticed it, examine it as carefully as I should have done, if I had known that it referred especially to the disease under consideration. The conclusions of Dr. Maclagan do not altogether (though pretty closely) accord with those arrived at either by the previously mentioned observers or by myself. Dr. Maclagan's observations should have an interest which none others have, except the case recorded by Dr. Parkes already noticed, namely, that there were "sixteen cases of uncomplicated pneumonia (one or two of which have been detailed in his paper) which it was believed might safely be left to take their natural course." I am not sure, however, what Dr. Maclagan considers being left to take their "natural course" means, as he mentions one case as allowed to run a natural course without the application of "remedial agents," which nevertheless (although a girl of only 14 years of age), was allowed four ounces of wine daily! In Dublin, however, we should consider it an important element of treatment. Dr. Maclagan also considers light diet (perhaps including *wine*), poultices, and in one case, blisters over the affected side, *no* treatment! I cannot agree with him in this, nor am I of the opinion that we can afford to stand by, and watch any case of pneumonia taking its natural course, even for the sake of science. I give a range of temperature taken by Dr. Maclagan in a case which apparently did not get any wine but was *only* blistered, as a fair average case of pneumonia.

Day.	Respiration.	Pulse.	Temperature.
4	56	120	102°·3
5	56	120	103°
6	38	96	99°·1
7	32	72	96°·4
8	32	68	96°·8
9	28	72	97°·1
10	36	72	97°·1

With a view of obtaining a *mean* range of temperature, I have made a calculation from about 20 cases.

Day.	Temperature.
3	102°·75
4	100°·8
5	101°·38
6	100°·34
7	99°·12
8	100°·11
9	100°·32
10	99°·31
11	98°·77
12	98°·42

Such a range will, of course, seldom if ever be met with in any *one* case, but it shows what may turn up, generally as to its highest and lowest temperature, and occasionally as to its variations, namely, the highest temperature is usually met with on the 2nd, 3rd, or 4th, to 5th days, and the lowest after the 6th. We also observe irregularities; for instance, a rise on the 5th, and on the 8th and 9th days. I do not attach much importance to such an average for pneumonia, but give it merely as it is usual in other observations of the kind.

When pneumonia occurs *as* a complication of another disease it causes a temporary *increase* in the temperature; for instance there was a boy affected with typhus, in whom an attack of pneumonia occurring on the 9th day was preceded by a rise of temperature to 104°·5, it having previously fallen to 103°. In a case of typhoid, where the temperature had been up to 104°·8, and gradually fallen to 102°, it again rose to 104°·6 on the accession of pneumonia, afterwards falling to 102°, and again rising to a 104°·8 on an increase of the pneumonic symptoms. I do not find that in pneumonia of both lungs the temperature is higher than when only *one* lung is attacked, nor does the extent of tissue affected make much difference. As to the relation of temperature to other conditions, I find that the temperature attains its maximum during the period of expectoration of rusty coloured matter, but falls while this still continues; in other words, it attains its maximum and begins to fall during the second stage of the disease. Dr. Maclagan states that the fall does not occur until the third stage commences. It is well known, however, that *all* the stages of pneumonia are usually present during a considerable portion of the duration of each case. I therefore prefer to speak of the duration of the rusty sputum to speaking of any special stage as all stages may co-exist.

This observation has some relation to the question whether pneumonia is essentially a local disease or local manifestation of a specific fever. Certainly, the fall of the temperature before the lung mischief is on the decline—indeed we may say before it is complete—rather points to the disease being of the character of a specific fever. I am rather inclined to this opinion myself, but do not propose to pursue this question further at present (interesting though it be). With reference to the relation of temperature to other symptoms—pulse and respiration particularly, I find that the pulse and temperature usually fall together or the latter shortly before the former; thus, in 12 cases where the relation between the pulse symptoms is specially and exactly noted, in 6 the temperature and the pulse fell together, in 5 the temperature fell shortly before the pulse, and in one only the pulse fell before the temperature. The fall in temperature does not generally, as in other diseases, precede the fall in the rate of the pulse. The high temperature corresponds also in most cases with typhus pulse—*i. e.*, a pulse of very low tension, easily influenced by pressure.

As a means of diagnosis the temperature may be useful in distinguishing the disease from typhus, for the maximum in this disease is always attained before the 6th day, usually on the 3rd or 4th; whereas in typhus the maximum is not usually attained until the 7th day or later; thus if one finds a patient with febrile symptoms and a very high temperature (103° or more) on the 3rd or 4th day, we may suspect pneumonia, and almost certainly exclude typhus, which is the disease most liable to be confounded with it. The following conclusions are, I think, justified by the foregoing observations:—

1st. Pneumonia has (when uncomplicated) a tolerably definite range of temperature.

2nd. The highest temperature attained is usually between 103° and 104° Fahr.

3rd. The maximum temperature is usually attained on the 3rd, 4th, or 5th day, after which the temperature falls and reaches the normal on the 6th or 7th day.

4th. The height of the thermometer does not necessarily indicate the intensity of the disease.

5th. The fall of temperature does not indicate the cessation of mischief, but only that the disease is about to enter on the 3rd stage.

6th. If a high temperature is maintained for a long time (more than 3 or 4 days) or a fresh rise takes place, it indicates a fresh attack in a previously healthy part, or the advent of a complication.

7th. The temperature and pulse usually, though not always, rise and fall together.

8th. The temperature usually decreases before the frequency of the respirations diminish.

9th. A high temperature before the 6th day in a doubtful case generally indicates it to be one of pneumonia, and *not* of typhus.—*Dublin Quarterly Journal, May*, 1869, *p.* 335.

26.—CASE OF PERSISTENT AND ALARMING HICCOUGH IN PNEUMONIA, CURED BY THE SUBCUTANEOUS INJECTION OF MORPHIA.

By Dr. John Constable, Leuchars, Fifeshire.

[The patient, a man 30 years of age, was labouring under the ordinary symptoms of pneumonia arising from cold. A persistent hiccough had begun shortly before Dr. Constable arrived. At first little attention was paid to the hiccough, but by the second day it was still unrelieved and was exercising a very prejudicial effect on the case.]

May 13th. Patient very much exhausted and distressed, as the hiccough, with scarcely any interval, had continued all night as severely as ever. I was at my wit's end, not on account of the pneumonia proper, which was progressing as favourable as could be expected, but because of this formidable and persistent hiccough. I continued some of the above-mentioned remedies, and asked Professor Bell, of St. Andrews, to see the patient with me in the evening. He confirmed my diagnosis as to the pneumonia, and agreed with me in thinking that, in so far as medication was concerned, it might be left now greatly to itself. We resolved to continue the constant poulticing to the chest, and address our treatment more particularly to the hiccough, which had now reached an alarming extent, and threatened, at no distant period, to kill our patient. Some of the remedies I have been employing received another trial—spirit of chloroform, bismuth, lime water, and cold soda water, &c.; ice could not be got. A large belladonna plaster was applied all night over the region of the stomach, and a dose of chlorodyne administered. If these remedies should fail, we agreed to apply a cantharides blister over the region of the stomach and diaphragm, dressing it with solution of morphia; if that also failed, to try the careful inhalation of chloroform, and to keep the patient under the influence of it for some hours, or longer if necessary.

14th. The patient had slept scarcely any; the hiccough was as bad as ever, and had been so all night. During the day several of the above-mentioned drugs were administered, and the blister applied, as agreed to at the consultation. The patient was now taking very little support, and what little he did swallow was almost immediately rejected by the belching and retching of the stomach, in connection with the violent and distressing contractions of the diaphragm, which were shaking not only the whole body, but the very bedstead, by their vehemence.

15th. Finding our patient in a very haggard and prostrate condition when I visited him this morning in company with my friend, Mr. Whitson, a medical student in his fourth year, I resolved to commence carefully, with his assistance, the inhalation of chloroform, as agreed to at the consultation with Dr. Bell, as the hiccough was continuing as bad as ever, in spite of everything that had been done. But before doing so, weighing in my own mind the fact that this hiccough was in all probability produced by spasmodic contraction of the diaphragm, caused by the abnormal excitement or irritation of the phrenic nerve, and remembering the beneficial, almost miraculous, results of the subcutaneous injection of morphia in *nervous* complaints, such as convulsions, sciatica, lumbago, tic douloureux, &c., I determined to give it a fair trial. I had with me a phial of the solution of muriate of morphia and Dr. Alex. Wood's syringe, by which I carefully injected ten minims of the solution under the skin over the intercostal muscles. I presume the arm might have done equally well. It will scarcely be believed, but the fact is, notwithstanding, that in a few minutes, as if by magic, *the hiccough stopped completely, and did not return.* The patient was left, of course, in a very weak and exhausted condition. I administered a dose of chlorodyne at bedtime.

16th. The patient had a good night, the first for more than a week, and was greatly refreshed. No return of the hiccough. The stomach now retained milk, small quantities of beef tea, and a teaspoonful of brandy occasionally. Physical examination showed that the pneumonia was progressing favourably. The rusty expectoration gradually got less, and in a day or two lost its rusty colour; the pulse counted 80 beats per minute; tongue cleaning at edges, and more moist. In short, from this day the patient slowly, but decidedly, improved uninterruptedly, till at the end of three weeks from the commencement of his illness, he was able to resume his ordinary avocation, though complaining of being easily knocked up from want of strength.

Remarks.—It may be remarked by some that the disease in this case may have reached the crisis on the 15th, and that the hiccough might have given way *without the subcutaneous* injection of morphia. If so, it was a very remarkable coincidence that within a few minutes of the operation Nature should have interposed and stopped the hiccough. The patient, a most intelligent person, a teacher by profession, insists that there was no coincidence of crisis in the matter, and that he is quite satisfied that the injection of the morphia stopped the hiccough, and saved his life. I am of the same opinion.

Before the case above occurred I had not seen hiccough to any extent *in pneumonia*, and was not aware that it accompanied that disease *as a symptom*. A medical friend has informed me, however, that about a year ago he had in his practice a case of pneumonia very similar to the above, in which hiccough came on on the third or fourth day. All the usual remedies were given without any benefit, and the patient died, he tells me, *of hiccough*, and not of the pneumonia properly speaking. Of course the subcutaneous method of cure requires further confirmation; but I think the facts I have narrated, in connexion with the above case, warrant me in bringing the subject prominently before the profession.—*Lancet, Aug.* 21, 1869, *p.* 264.

27.—SUCCESSFUL CASE OF ARTIFICIAL RESPIRATION BY THE SYLVESTER METHOD.

By Charles Moore Jessop, Esq., Staff-Surgeon, Associate of King's College, London.

[The following interesting case occurred as Mr. Jessop was on his way to India, in 1864, in charge of troops, women, and children.]

On the 7th September (having been at sea for five weeks) a fine-grown and healthy-looking baby, three months old, was attacked with capillary bronchitis: it did well till the 10th, when a relapse occurred—the difficulty of breathing increased. The child, however, rallied in the course of the day, and between nine and ten the same evening appeared to be progressing favourably.

About a quarter to twelve I was called by the father, saying that the child was dead. I went down and found it lying in its mother's arms, apparently dead. It did not breathe, nor make any effort at inspiration; there was no pulse; the pupils were contracted and insensible to light; there was a slight flutter in the præcordial region.

At the rate of twenty or thirty times in a minute, I alternately raised and depressed the arms for about four or five minutes, when the pallor of the lips began to abate. With the aid of friction to the feet and legs, I continued the process till the lips were crimsoned and the breathing was re-established. I gave a half-ounce enema of gravy-soup and brandy, and directed the friction with oil to be extended to the stomach and chest at intervals. I left him breathing feebly, but regularly, and without apparent difficulty.

About one o'clock I was again called by the father, saying, "He really is dead this time, sir." I found the jaw had fallen; respiration had ceased; there was no pulse; and, but for the contracted state of the pupils, I should have said the child was dead. I commenced the same process as before, and fortunately with a similar result. I left, but came back before 2 a.m., when I learnt that the respiration had gradually diminished in rate and strength, and that no inspiration had occurred for some time.

For the *third* time, I adopted the Sylvester method of artificial respiration successfully; and again at the hours of three, four, five, half-past six, and, for the last time, about eight o'clock in the morning.

Thus, *within nine hours, this child, three months old*, but for the above method, *must have died any one of those eight times.*

The enema of gravy-soup and brandy was given after each of the first attacks: afterwards, every two hours.

Artificial respiration, after the third attack, was not employed for so long: about five o'clock I was able to procure hot water for a warm bath, so that as the day wore on the fear and danger of death diminished.

The enemata of gravy-soup were given three times a day with half a drachm *of the syrup of iodide of iron*, and his mother's milk instilled into his mouth.

When he could nurse as usual, the enemata were used only twice daily till the 22nd September, when they were discontinued. As cough was still present, the syrup of iron was given by the mouth twice a day.

On the 25th September aphthæ appeared—a few drops of ipecacuanha wine were added to the mixture.

On the 30th of the month all trace of his recent illness had disappeared, and medicine was discontinued.

He remained well for the rest of the voyage, and I left him at the end of November at Poona a fat and rosy-cheeked baby.

This was the mother's second child, her first having died in Ireland of bronchitis at the same age. The father, a sergeant of the 106th Regiment, was an old soldier of wiry constitution. The mother, a plump, fresh-coloured, but short-necked woman, was about twenty-five years of age.

There are three points of interest in the foregoing case:—

The diagnosis of death, and its application to the means of recovery, by

The treatment of suspended animation by the Sylvester method; and

The theoretical value of the other treatment.

The Diagnosis of Death.—Among the enumerated signs of real death I have not seen mentioned that of the fully dilated pupil. For many years past it has always appeared to me to be a point worthy of note, having a direct influence on treatment. As far as my observation has gone, if a fully dilated pupil is found in connexion with the cessation of the respiration and the circulation, we may safely conclude that life is extinct, and that the process of artificial respiration will be futile.

In death beginning at the heart, it would appear to be the first fully expressed sign of death, as in cases of hemorrhage: but in asthenia and apnœa it would appear to be the latest in its occurrence.

Had it not been for the contracted state of the pupils in the case just recorded, I should not now have the pleasure of bringing this case to notice, for it was on this sign alone that I relied for the hope I gave the mother of recovery.

If, therefore, I should be again called on to treat a case of suspended animation from any cause, I would first ascertain the condition of the pupils before adopting any means of recovery. If I found them contracted or only partially dilated, I should proceed with a full assurance of success; but if, on the other hand, I found them fully dilated, my practice would be but tentative and for the satisfaction of the bystanders. A case of this kind occurred to me on board the same ship on the same voyage a few weeks later. A man fell down dead on the main-deck as the troops were sitting down to dinner. The occurrence took place close to the fore-hatch, so that no time was lost in commencing Dr. Sylvester's plan of treatment. The process was continued till dinners were over, though the absence of the "expiratory puff" showed that the man was stone-dead. At the post-mortem examination, fluid was found filling each of the three serous cavities of the chest; also, an aneurism of the ascending aorta.

The Treatment of Suspended Animation.—The principle of the process for artificial respiration, introduced by Dr. Marshall Hall, consists in the alternate compression and expansion of one lung with movement of the heart from side to side. But in natural respiration, in inspiration the lungs, heart, and great vessels descend; in expiration the lungs, heart, and great vessels ascend; consequently Dr. Sylvester's method, which imitates the complete acts and effects of respiration, is to be preferred; because, in the first place, it aids that diffusion of gases which takes place naturally in the lungs, for by the alternate dilation and contraction of the chest we endeavour to shift the stationary air to and fro in *both* lungs as in health, and so bring about gaseous exchange with the tidal air, averting "oxygen starvation and carbonic acid poisoning."

Secondly, It brings about the reflex action of the medulla oblongata, for the mucous membrane of the parts about the glottis is very sensitive to the least irritation, and the constant currents of fresh cold air, which are being sucked into the windpipe, stimulate the afferent nerves to the medulla oblongata, which in *turn being stimulated* gives rise to reflex action.

Thirdly, It "helps the heart to drive the blood the way that the heart propels it." The motion of the heart is dual. It has a thoracic or respiratory motion up and down, and a cardiac or circulatory motion forwards and outwards, backwards and inwards; the combined motion being a kind of circumduction. The supine position favours the passage of the blood through the heart, and reduces to a minimum the muscular force required to carry on the systemic circulation. Respiration tends to accelerate the flow of blood towards the heart, and brings the blood to the auricles by suction force through diminution of the atmospheric pressure on the walls of the chest. The blood, therefore, thus brought to the auricles enlarges them in all directions, and by its pressure, or the rolling over and over of its particles, stimulates the cardiac ganglia to reproduce the heart's intrinsic or erectile movement. This movement, favoured by the supine position, if once re-established, opens the tricuspid and mitral valves. In this manner then, the blood is driven the way that it should go. May we not suppose that the stimulation of the cardiac ganglia by the pressure or movement of the particles of the blood is analogous to the stimulation of the medulla oblongata by the passage of cold air over the afferent nerves near the glottis?

In the last place, this process assists in the production of heat. Every contraction of muscle is attended by oxidation, and the extensive muscular movement the upper part of the body is subjected to generates a large amount of heat, which must be conveyed by the veins towards the heart, and directly affect the cerebral, spinal, and sympathetic nerves and plexuses. Hence, then, when the circulatory and respiratory processes are at a standstill, we endeavour to set them again in motion. "Each," says Dr. Huxley, "consists essentially of a kind of pump, which distributes a fluid (aëriform in the one case, and liquid in the other) through a series of ramified distributing tubes to a system of cavities (capillaries or air-cells) the volume of the contents of which is greater than that of the tubes." Therefore, by this process, we pump into the lungs oxygen gas, and pump out carbonic acid gas; and we also pump into the heart blood to force, as it were, the cardiac ganglia to rouse themselves and open the flood-gates (tricuspid and mitral valves) to the stream of life.—*Edinburgh Medical Journal*, *Sept.*, 1869, *p.* 204.

28.—INOCULATION OF TUBERCLE.

The subject of the inoculation of tubercle has been examined carefully by Cohnheim and Fränkel. Their experiments were made with guinea-pigs, and they found that the introduction of tubercle from the human subject was followed, if the animal survived long enough, by the development of unmistakable miliary tubercle in the inoculated animals; results which agree with what may be called the positive experiments of Villemin.

They also found, however, that the same result—namely, the development of miliary tubercle—followed the introduction of other substances than tubercle.

Portions of apparently healthy organs, pieces of cancerous tumours, condylomata, sarcomata, pieces of blotting paper, charpie, vulcanised caoutchouc or guttapercha, when introduced into the peritoneal cavity, gave rise to a uniform result, namely, the development of tubercle in the animal subjected to the operation. These results are directly contradictory of Villemin's negative experiments, but agree with those of Dr. Sanderson and Dr. Wilson Fox, noticed in the number of the Journal for August, 1868.

The introduction of any of the substances which were employed was followed by peritonitis, and about one-half of the animals died from this cause in from one to four days after the operation—of course at too early a period to afford any evidence of tuberculosis. In those who survived, the peritonitis became circumscribed, and a tumour with a capsular envelope was formed. Within the capsule the foreign body was to be found, when charpie, caoutchouc, *or similar substances had* been used, but in no instance was it possible to recognise a trace of any of the portions of the organism which had been introduced, whether normal or pathological. The alteration which the portions of cancer, tubercle, &c., underwent, were so complete as to entirely prevent their recognition, even with the microscope. It is evident, according to the authors, since the systemic infection cannot be the direct result of the inoculation—a fact which is obvious in cases where caoutchouc, &c., have been introduced, and which is in the highest degree probable as regards the introduction of animal substances—that the cause of the phenomena must be sought elsewhere. The really effective agent is the dead and degenerated pus which is found, in every instance, as the result of the reactive inflammation after the introduction of the foreign bodies. This pus is the true foreign body, and its absorption into the economy is the cause of the subsequent pathological changes.—*Virchow's Archiv.*, vol. xlv., p. 216.—*Dublin Quarterly Journal, May*, 1869, *p*. 416.

29.—ON THE MODE OF ACTION AND USE OF BELLADONNA IN THE TREATMENT OF ASTHMA.

By M. Le Dr. See, Clinical Professor at the Hôpital de la Charité, Paris; Professor of Therapeutics to the Faculty.

The remedies which are especially efficacious in the treatment of asthma are the *vascular* and *cardiac* agents; *i. e.* those which act either on the heart or on the muscular coat of the vessels; and among them we find three which have been principally applied to the treatment of this disease—belladonna, datura, and hyoscyamus.

Belladonna causes contraction of the muscular fibres of the arteries in such a way as to stimulate the flow of blood in the organs, and assist the functions of the latter, while other vascular remedies, which also affect the muscular coats of the vessels, act in a different manner; *e.g.* nicotine produces a lasting spasm, which only gives place to dilatation when the muscle has become tired out. Bromide of potassium causes a permanent contraction, and produces anæmia of the organs, while belladonna produces the opposite state—active congestion.

The classification which I have adopted indicates that the remedies are grouped according to their affinity for the organs which they are destined to modify and to heal.

I anticipate an objection here. How can we prescribe "vascular" remedies to cure a disease which depends not on any vascular affection, but on a disturbance of respiration? The answer is easy. It is necessary to employ vascular remedies, because the means of modifying respiration is to be found in the power to alter the pulmonary circulation. Further, the essential cause of asthma is an exaggerated excitability of the spinal cord, impressions on which provoke the reflex convulsion which constitutes the paroxysm; but belladonna acts upon the vessels of the cord, and diminishes its excitability by making its circulation active. Finally, by causing the pulmonary vessels to contract, belladonna produces congestion of the pulmonary mucous membrane, and helps the bronchial secretions, the expulsion of which is often so difficult in asthma.

Action on Respiration.—In order that nerves may perform their functions normally, they must be supplied with normal blood, rich in oxygen, and not charged with carbonic acid; without this the *nœud vital*, which is endowed with very great susceptibility, functions badly, and it is thus that dyspnœa is so easily produced in chlorotic subjects, whose blood, poor in globules, is not sufficiently charged with oxygen. This condition is especially indispensable to the respiratory nerves, which do not provoke contraction, except upon excitation of the spinal cord through the vagus, the nerve which receives sensory impressions and conveys them to the medulla, where they are transformed into motor impulses to the intercostal muscles and the diaphragm.

What does experimentation teach us on the subject? Section of the vagus *does not abolish respiratory* movements; the type of respiration changes, but the animal does not succumb. Respiration slackens, but the extent and energy of its movements are increased. If the vagus be *stimulated*, instead of being *divided*, the number of respirations is still not increased; the reverse is the case if it be paralysed. By stimulating this nerve, and by dividing it, we do not, then, suppress breathing, but only set up a different respiratory rhythm. In the same way, in the paroxysm of asthma, the respiratory rhythm is altered; so that, in treating an asthmatic patient, we must seek a remedy which can change the rhythm to a different type from that which prevails in the paroxysm.

Let us suppose that respiration has its ultimate source in the bulb, and that at the moment when the nervous fluid is about to excite the intercostal and respiratory nerves an obstacle occurs; well, the pneumogastric has the power of overcoming that obstacle, and the normal rhythm is preserved from interruption. Remedies which are prescribed with a view to action on the pneumogastric alter the rhythm. The asthmatic patient makes a convulsive inspiration, which is due to tetanic contraction of the inspiratory muscles—the diaphragm, the intercostals, and the auxiliaries. In belladonna and datura we have the means of quickening respiration; the inspirations then cease to be convulsive. Belladonna has the indisputable and direct effect of quickening respiration; and if by giving the asthmatic patient a dose of from 5 to 10 centigrammes (·78 to 1·56 grain) of extract of belladonna you can make his breathing quicker, you will benefit him much. This action is proved to occur by the following experiment:—Inject atropine into the carotid of a dog, and you will immediately observe acceleration of breathing. At the same time that belladonna increases the number of respirations, it changes their type and diminishes their depth. Belladonna, then, is useful in the first stage of the paroxysm, and especially within the first three or four hours. In the second stage, breathing becomes slower from fatigue of the pneumogastrics, and we have now a renewed indication for the use of belladonna, which will quicken respiration again. It is for this reason that you must not prescribe opiates, as is often done by physicians who are called in during the attack, and will insist on soothing the patient at any cost. Opium acts inversely to belladonna; it diminishes the frequency of breathing to the damage of the patient.

Action on the Vessels.—Belladonna accelerates the action of the heart. This fact has been demonstrated by Bezold, who showed that if atropine be injected into the blood of an animal, the beats of the heart are sometimes doubled in number. This effect is due to paralysis of the terminal ends of the cardiac branches of the vagus. This kind of action is of no use to us in the case of asthma, but on the other hand, it can always help us when there is paralysis of the pneumogastrics and increased depression in the vessels. Belladonna, which makes the circulation more active, gives a new impulse to the blood when it is stagnating in the lungs, and the first effects of this are perceived in the relief of breathing.

Action on the Cord.—Bezold had formulated the following law:—Belladonna possesses the power of paralysing all the organic muscles, and especially the sphincters. But this law is false, for, merely to give one instance, belladonna dilates the pupil, but contracts the organic muscular fibres of the intestines. As to the muscular fibres of the bronchi, to which some have attributed the spasm of asthma, belladonna has no action upon them; besides which there is no need to concern ourselves with those muscles, as it is well understood, at the present day, that they play no part in the production of asthma.—*Practitioner, July*, 1869, *p.* 1.

DISEASES OF THE ORGANS OF DIGESTION.

80.—THE USE OF THE SUBCUTANEOUS INJECTION OF MORPHIA IN DYSPEPSIA.

By Dr. T. Clifford Allbutt, M.A., Cantab., F.L.S., Physician to the Leeds General Infirmary.

[We are apparently only at the commencement of our discoveries as to the value of morphia injected subcutaneously. The action of the drug is quite different in many cases, when given in this way, to what it is administered in the usual manner. Morphia given subcutaneously has some power profoundly to modify the nervous system in such a way that it must become a prominent remedial means in all disorders where the nervous system is mainly at fault.]

I was first led to prescribe morphia hypodermically in dyspepsia by observing the effects of its continued use in a lady whom I was treating by this method for rheumatic gout. To enter fully into her case would occupy a disproportionate part of my space. Suffice it to say that she is a lady of extreme nervous susceptibility, and that her dyspepsia was something far more than the dyspepsia of disordered secretions. The mucous membrane was extremely irritable, the appetite uncertain, and the bowels very capricious; so that a little worry, or a little alarm, or a little over-exertion, would at once take away the appetite, bring on diarrhœa, or cause sickness. There was evidence in fact, if I may use a somewhat inaccurate expression for brevity's sake, of extreme hyperæsthesia of the digestive mucous membrane. These symptoms were relieved from time to time by bismuth, steel, digestive pills with minute doses of opium, and the like. But it was not until she began to use the hypodermic method for the rheumatism that I discovered how happy an effect the morphia had upon her digestion. I began to find on the morning visit that the morphia of the evening before, so far from coating the tongue and depressing the appetite, cleaned the tongue and made her quite hungry. The days of her best appetite and most regular stomach and bowels were the days following the subcutaneous injection of a quarter of a grain of morphia. I was so struck with this that I determined to use the syringe in many of these unhappy nervous dyspeptics who are the plague of a doctor's consulting room, and the results have far exceeded my expectations, which, at first, were only moderate.

I will now try to show in what kind of dyspepsia I advise the subcutaneous use of morphia. In doing this I shall only cite cases as illustrations, and shall leave proof to my readers, who will have ample opportunities for trial. The incessant use of the unsatisfactory expression "atonic dyspepsia" in our books is an evidence of the strong general feeling we have that a large number of such cases depend less upon disordered organs than upon organs deficient in vigor. Very frequently, however, we find not a mere passive debility, but a state of instability, of irritability, or of erethism, whichever word may best convey my meaning. And it is now widely enough known, that many cases of foul breath, thirst, and loaded tongue, depend rather upon this nervous condition than upon "sluggish liver," or "deranged secretions." It is in these cases that the hypodermic use of morphia is so strikingly successful. Such forms of dyspepsia we know often occur in "hysterical" women, and I may say in passing that the morphia syringe, carefully used—and used carefully in a moral as well as in a medical sense—is by far the most potent means of remedy we have for "hysteria." Nothing so soon and so permanently relieves general irritabilities, instabilities, globus hystericus, capricious appetite, &c.

I do not apologise for this digression, for in the dyspepsia of these cases the syringe is most useful.

Miss ——, aged 28, had recently been disappointed in love. She had become moody, capricious, melancholic, and indolent. She refused her meals, and she lay mostly in bed. She suffered most painfully from globus, and frequently vomited her meals. She had begun to crave for and to take alcoholic stimulants. When I saw her I found, in addition, a restless, conscious manner; muddy complexion; soft, easily-quickened pulse; coated tongue; uncertain bowels; humid abdomen; cold extremities and flushings of face and neck. She complained, of course, of the usual lassitude, sinkings, tremors, &c. Her temperature was normal in the evening, and the catamenia were but little wrong. She had been carefully treated for the various secretions, and had subsequently undergone careful and vigorous tonic treatment. I gave her an injection of a quarter of a grain of morphia the same evening. I scarcely dare describe what I believe to have been its effects, lest I should seem to emulate the virtues of Holloway's pills. I was amazed to see her walk with her sister, into my consulting-room, the next morning, soon after breakfast, and declare that she was a new woman. From that time we used only the syringe (one-fourth of a grain every night), and she made a most satisfactory recovery,—the tongue cleaning, the appetite returning, the pulse steadying, and the *morale* improving. All desire for alcohol and all tendency to globus and vomiting disappeared with the first injection and did not return. I write about four months after her recovery. The injection was readily omitted when the health was restored, and no tendency to opium eating appeared. Indeed, one night, when the injection could not be given, she took a pill containing a quarter of a grain of morphia, and expressed great discontent next day with its disagreeable effects, which were the same as in a healthy person unaccustomed to the drug.

My space is, I see, rapidly diminishing. So without farther remark let me run on to another case of a kind which often baffles all treatment.

Mr. ——, a merchant, having somewhat large dealings of an anxious kind, but not under any especial pressure, consulted me for dyspepsia. He said, "I fear you can do nothing for me: I have seen " So-and-so and So-and-so (naming eminent London physicians), "and I know that I am a hopeless dyspeptic. Nothing does me good for any length of time." He was of a well-known type—spare, fretful, keen, hasty or absent in manner, dry skin, sallow face, pale compressed lips, stooping gait, and quick step. His tongue was too clean, and was red at the tip and edges. Pulse small and quick, usually 90 when at rest. Evening temperature normal. No suspicion of tubercle. His meals were a dread to him, instead of a hope, and bed at night was an actual terror. Here was a specimen of the true nervous dyspeptic; I need not describe him more in detail. Knowing that every conceivable remedy had been tried, I put him at once upon the subcutaneous injection of morphia. He had about one-fifth of a grain about three p.m., followed by a rest on the bed, and one-fifth of a grain again about half-past ten, followed by rest in bed. This he had for ten days, and his improvement was as pleasing to me as to himself. His afternoon injection soon began to make him positively hungry for his evening dinner, and his nights became quite "balmy." I then gave a quarter of a grain every night for a week or ten days longer, and had the pleasure of seeing him cured as to his dyspepsia, and more light-hearted than he had been for years. The recovery is as yet too recent for me to judge of its permanency.

I must pass by the dyspeptic with the flabby indented tongue—for whom, indeed, my experience would not lead me to try the morphia until steel and strychnine had utterly failed—and I must conclude with the following case of acute gastric catarrh:—

I was requested to meet my friend Mr. Atkinson, in the case of Mrs. ——, who was suffering from great disturbance of the stomach. We diagnosed "acute gastric catarrh," and I am pleased to find on consulting Dr. Wilson Fox's book, for the first time in reference to this case, as I now write, that our diagnosis is well borne out by his description of "(*a*) Acute indigestion and the 'embarras gastrique.'" Mrs. —— was a young married woman of about 25. She had suffered from several causes of depression, one of them being flooding after labour. There was decided epigastric tenderness, some pain after food, and constant vomiting. The vomiting occurred always after food, however small the quantity, and often independently of food, when considerable quantities of mucus and water were ejected. The tongue was thickly furred, and the breath *offensive; there was* decided evening fever (Fahr. 100°—101·5°), with quick weak pulse and some night-sweats. She complained much of thirst, and would, if permitted, swallow quantities of cold water. There was headache, lassitude, and extreme debility. Sleep was absent, or was dreamy and unrefreshing. The urine was scanty and thick, the bowels constipated. Mr. Atkinson had tried every dietary, nutritive enemata, and every kind of remedy (opium included), for several days without relief, and the symptoms became alarming. He gladly, therefore, agreed to try the morphia injection, and was as pleased with the result as I was. We injected a quarter of a grain in the evening with the effect of at once arresting the vomiting and procuring sleep. In this case the morphia injection had also the wonderful effect I have before mentioned, of creating appetite and cleaning the tongue. The next day she began to retain milk and lime-water, the vomiting became rarer and rarer, and the ejected mucus far less copious. She had the injection repeated nightly for a week, or ten days, and progressed with few drawbacks to convalescence. —*Practitioner*, *June*, 1869, *p*. 342.

31.—CONSTANT VOMITING AND ERUCTATIONS RELIEVED AT ONCE, AND PERMANENTLY, BY SULPHUROUS ACID.

Under the care of Dr. Chas. R. Drysdale, at the Metropolitan Free Hospital.

Mrs. C., aged 36, seen first on May 25th, 1869. She has been suffering for the last month from vomiting of all her meals and constant eructations. The eructations are incessant, and during the time patient was in consulting-room they occurred every minute or two. She brought up a good deal of frothy and sour clear fluid. To take a bismuth and hydrocyanic acid draught three times daily.

June 8th. No better. Ordered an effervescing draught thrice daily.

15th. No better; eructations as before, and continued vomiting of all her meals. Half a drachm of sulphurous acid in one ounce of water three times a day.

29th. The patient says that she is now quite well, and that after taking the last medicine for a day, the vomiting and eructations ceased.

July 6th. She has continued free from vomiting since.—*Lancet*, *July* 24, 1869, *p*. 120.

32.—TREATMENT OF TAPEWORM.

Dr. Johan Rulle, in an "Inaugural Dissertation," gives the following results, derived from the administration of certain components of the extract of male-fern to twenty-nine patients affected with tænia. 1. Not only the filicic acid, but also its decomposition-products, which are soluble in alcohol, will destroy tape-worm. 2. One must be very cautious in concluding that tænia are destroyed whilst in the intestinal canal, as the absence of the ova of tape-worms does not always indicate the non-existence of the parasites. 3. The precipitate thrown down on the addition of hydrochloric acid to extract of male-fern, previously treated with ammonia, is more active than filicic acid. Out of nine cases in which the acid alone was administered, there were two only in which the worm was completely expelled, while in two the agent was quite useless. With the precipitate, on the other hand, the worm was wholly discharged in four instances, and a complete negative result followed but once. 4. The pure filicic acid was administered in twenty-four instances without a change of diet, and in fifteen where the diet was changed; in one of these cases, the result was imperfect; and in a second, failed altogether. The hydrochloric acid precipitate failed in three instances in which the diet was unchanged; in nine other instances, in which the diet was restricted, there was not a single miscarriage. Hence the great importance of attending to the diet as a condition of success in the treatment of tapeworms. 5. Filicic acid given in the form of pill, removes tænia with the greatest certainty when it is combined with castor-oil. This increase in the action of the agent is to be ascribed, not to the solubility of the acid in the castor-oil, but rather to the drastic action of the latter remedy. 6. Drastics assist the cure of tapeworm, not only because they bring away the parasite, but also by their favouring the deeper penetration of the anthelmintic into the intestinal canal. 7. The acid is best administered in the impure form in pills, sixteen of which, containing 9·6 *grammes* of the remedy, should be made to serve for four doses. With two of these doses, castor-oil is to be combined. This treatment should be preceded by a restriction in diet.—Schmidt's *Jahbücher*, No. 2, 1869.—*British Medical Journal*, *May* 22, 1869, *p.* 469.

33.—CASES OF HEPATIC DISEASE.

By Dr. J. D. Heaton, Physician to the Leeds General Infirmary.

Case 1.—*Discharge of Gall-stones from the Umbilicus: Recovery.* Margt. P., aged 39, was prematurely confined of a seven-months' child, still-born, five months before admission. During the early part of her pregnancy, she had an inflammation in the body, attended with much pain, for which leeches were applied. She seemed to recover from this, but subsequently (about two months before her confinement) an abscess formed at the navel, which was poulticed; it became very painful, and ultimately opened spontaneously, discharging much matter which was followed by the escape of some *gall-stones.* The opening at the navel did not close, but continued to discharge matter mingled with mucus and bile, and occasionally a gall-stone, the exit of which was accompanied with much pain and soreness. In all about eight or ten stones had been discharged up to the time of her admission; they were about the size of a horse bean, and had flattened sides. She had never had jaundice. The bowels were generally in good order, and, except for the local inconvenience of the opening at the navel, she was now in pretty good health. The liver was not enlarged. The aperture was exactly at the umbilicus; the part around was inflamed; a ropy mucous fluid escaped, mingled with pus and bile.

The patient remained under observation about three months; poultices were applied, at first to the place; the bowels were gently regulated with aperients; and she was kept at rest. During this time several calculi were discharged similar to those which had been passed previously. After the escape of each stone, the body was sore and tender for a time. Ultimately no calculi escaped for a considerable time, the opening became very nearly completely closed, and was free from pain, and the patient feeling herself quite well, was discharged.

In this case, the mucous membrane of the gall-bladder had been inflamed, which condition had been due to the presence of gall-stones, perhaps favoured by the state of pregnancy. Ulceration of the mucous membrane resulted; and, the gall-bladder having become adherent to the abdominal walls, a fistulous communication between the seat of the ulcer and the umbilicus had been gradually formed. Thus a comparatively safe, though troublesome exit was provided for the concretions; and, upon their removal, the canal by which they escaped having contracted, the patient is restored to health; no serious injury to the biliary apparatus having resulted from the occurrence.

Case 2.—*Hepatic Abscess Discharging into the Bronchial Tubes: Recovery.*—Mary P., a middle-aged woman, was admitted into the infirmary, whose previous history was obtained, as follows. She had been ill and under medical treatment for three months. She had, at the commencement of her illness, been treated for chronic hepatitis. Subsequently she came under the care of another practitioner (my informant), who then found complete dulness of the right side of the chest, which measured two inches more in circumference than the left side. She had intense pain, relieved only by large doses of morphia. Suddenly she expectorated a large quantity of pus; and, in the course of six hours, nearly a chamber-pot full of matter is said to have been expectorated. When this large discharge ceased, the expectoration which continued was tinged with bile. Great relief to the pain followed the escape of matter; but she was much prostrated; and she was sent to the infirmary that she might have better support than her own means would supply.

When she came under our observation, the more marked symptoms had subsided. There was still deficient resonance and obscure respiration in the right chest, and pain under the axilla, for which a blister was applied. The liver symptoms had subsided. She had no febrile symptoms, pulse feeble, tongue clean. She did not remain long in the infirmary, being anxious about her family, and determined to go home. Her treatment meanwhile was simply in aid of the spontaneous restoration which was in progress.

This case, though imperfectly recorded, is a well-marked example of abscess of the liver, opening by ulceration into the right pleural cavity, and thence by erosion of the substance of the lung (probably at a point adherent to the thoracic walls), into a bronchial tube by which the matter was discharged through the mouth. A direct communication with the interior of the liver was still, for a time, maintained; and some bile, flowing from open biliary ducts, mingled with the sputa. No doubt this was a state of much danger; continued suppuration and progressive destruction of lung tissue being probable results. But, whilst under observation, the curative process seemed to be in the ascendant, and there was a fair prospect of restoration to health, more or less complete; a result very rarely obtained in cases of like nature.

Case 3.—*Hepatic Abscess opening into the Pericardium.*—In addition to the above I will notice briefly a case not under my own treatment, but of which I witnessed the post mortem examination; being that of a young woman who had been out of health for no long time with general symptoms, only rather obscurely pointing to the liver; when she was suddenly seized with pain in the chest, great agitation, great excitement, and disturbance of the heart's action, oppression of the breathing, and speedy death.

The post mortem examination disclosed a large abscess in the liver, which had penetrated the diaphragm, and opened into the pericardium, which was filled with pus, yellow from an intermixture of bile. So indeterminate had been the symptoms of the progress of this serious lesion that the real nature of the case had been unsuspected. The abscess of the liver was probably secondary, or metastatic, though the source of the original impurity of the blood of the portal vein was not apparent; and the large formation of matter had been effected without any of the subjective symptoms usually accompanying suppurative inflammation. Although the escape of the matter of an hepatic abscess into the thorax is not very uncommon, its discharge into the pericardium is of unusual occurrence, and is improbable *a priori*. In the Sydenham Society's *Translation of Frerichs*, I that author quotes Rokitansky, Graves, and Fowler as having witnessed this result. The discharge of the matter into the shut sac of the pericardium is a mistaken direction of a spontaneous curative attempt which manifestly can only terminate in speedy destruction.—*British Med. Journal, July* 3, 1869, *p.* 8.

34.—DIAGNOSIS OF THE SEAT OF INTESTINAL OBSTRUCTION BY THE INJECTION OF FLUIDS.

In his posthumous work on intestinal obstruction, Dr. Brinton stated that the seat of intestinal obstruction can be readily ascertained by observing the amount of fluid which can be injected into the intestine.

If only a pint can be introduced, the stricture is not lower than the upper end of the rectum; if one and a half, or two or three pints can be introduced, the stricture is at a corresponding portion of the sigmoid flexure; a larger quantity points to the colon, but here the indications are less precise. In one instance, in which the stricture was seated at the upper part of the ascending colon, nine pints of fluid were introduced.

Dr. C. Hilton Fagge, in an elaborate paper on intestinal obstruction, draws attention to the fact that fluids may be injected so as to pass through a constriction, or beyond a tumour, while the intestinal contents may be unable to pass from above downwards. He quotes a case of disease in the sigmoid flexure, in which four pints of warm water were injected. Of this only a small portion returned, the greater part being retained, and no doubt adding injuriously to the accumulation already existing within the intestine.—*Guy's Hospital Reports*, 1869, *p.* 319.

Dr. Von Trautvetter has examined the question of how far fluids can be made to ascend in the intestine.

His experiments were made by injecting a solution of prussiate of potash, and by treating the intestine, when laid open afterwards, with a solution of perchloride of iron. A blue colour was produced, marking exactly the distance to which the injected fluid had penetrated. By comparative experiments on dead and living animals, and by the, as it appears to us, unjustifiable experiment of injecting a moribund patient, he arrived at the conclusion that the intestine during life is capable of receiving the same amount of fluid as after death. In the absence of obstruction from stricture, morbid growths, impacted fæces and the like, injections can be made to penetrate to the commencement of the colon, but for effecting this a long elastic tube is indispensable.—*Deutches Archiv. für Klinische Medicin*, vol. iv., p. 476.—*Dublin Quarterly Journal, May*, 1869, *p.* 426.

DISEASES OF THE URINARY ORGANS.

35.—REMARKS ON THE PROGNOSIS IN BRIGHT'S DISEASES.

By Dr. Austin Flint, (read at a Meeting of the New York County Medical Society.)

1. *The prognosis considered with reference to the different renal affections constituting Bright's diseases.*—[The term "Bright's diseases" is used by Dr. Flint, implying that he does not hold to the doctrine which was advocated by Christison and Frerichs, whose works were published within a few years of Bright's discovery, that the various lesions of the kidney are different stages of the same disease. Few pathologists, at the present moment, uphold the correctness of the doctrine.]

It does not come within the scope of this paper to canvass the opinions of different pathologists, or to enter into a discussion of the question which I have raised; but, as preliminary to the first of the three aspects under which I propose to consider the prognosis, I shall simply enumerate several morbid conditions which, in the existing state of knowledge, it seems probable are the anatomical characters of different diseases.

1. Inflammation within the convoluted uriniferous tubes may be considered an individual disease pretty well established. It is too limited a view of the affection called, after Johnson, desquamative nephritis, and by Dickinson, tubal nephritis, to consider the inflammation as always acute. Doubtless here, as in other situations, the inflammation may be either acute, subacute, or chronic.

2. The morbid condition described by Bright, and called the "smooth white kidney," should, as it seems to me, for the present, be reckoned as an individual disease. The theory which attributes this condition to inflammation within the tubes is hardly so well established as to warrant its exclusion as a separate affection. Even admitting that it is an inflammatory and an intratubular affection, its anatomical characters seem to be sufficient to constitute it a distinct disease.

3. The fatty kidney appears to have been rather unceremoniously thrust out of the group of Bright's diseases by some pathologists, on the ground either that this anatomical condition is due to a fatty degeneration of inflammatory products, or that it is merely incidental to other morbid affections of the kidneys. These reasons must be regarded as resting on inference, not on demonstration; the characters, both gross and microscopical, of the fatty kidney are highly distinctive, and an analogous anatomical condition of a fellow-gland, the liver, is recognised as a distinct affection. Hence, as it seems to me, for

the present, at least, the fatty kidney is entitled to an independent position among the Bright's diseases, admitting that this, as well as each of the other affections, does not invariably exist alone, but may be associated with other lesions.

4. That the affection known as the fibroid, the contracted or atrophied, and cirrhotic kidney is to be regarded as holding a distinct place among Bright's diseases, is admitted by most pathologists, although with regard to this affection, as well as with regard to its analogue, cirrhosis of the liver, there is room for discussion and difference of opinion respecting the morbid processes of which this lesion is the result.

5. Finally, no one doubts the individuality of the affection called the waxy, the lardaceous, or the amyloid kidney, notwithstanding the mooted questions concerning this morbid condition.

Here, then, are five renal affections which have claims to be recognised as distinct, constituting, collectively, with our present knowledge, the group of Bright's diseases.

Now, as regards prognosis, these different diseases are by no means on the same footing. What is true of one, respecting the probability or possibility of recovery, is not true of the others. Undoubtedly a simple inflammation of the uriniferous tubes may end, if indeed it do not generally end, in recovery, leaving the structure of the kidneys intact; and this result may be expected, be the inflammation acute, subacute, or chronic. But it is probable that, in certain cases, this affection leads to the second of the five diseases, namely, the smooth white kidney, and perhaps also to the third of the five diseases, namely, the fatty kidney. Does recovery from the two diseases last named ever take place? Our present knowledge does not enable us to answer this question positively. But we may assume it to be highly probable that, having progressed to a certain extent, the morbid process or processes, whether inflammatory or not, which these diseases involve, may cease, and retrogression take place, leaving at length the organs, if not intact, not damaged enough to compromise seriously their functional capacity. The fourth disease, namely, the contracted or cirrhotic kidney, must be regarded as involving a permanent lesion. It is hardly possible for recovery to take place without a persistent structural injury; but even this lesion may cease to be progressive, after a greater or less amount of damage, and recovery be possible in the same sense as recovery from tuberculous disease of the lungs is considered as having taken place, that is, the morbid processes cease, and there are no longer any symptoms of disease, but the functional capacity of the organs is more or less impaired. The fifth disease, namely, the waxy kidney, is of less practical importance than the other diseases, because it is so rare; but it is not certain that the lesion peculiar to this disease may not disappear. At all events, this affection, like the three preceding affections, may be non-progressive after it has reached a certain point, the kidneys remaining unsound, but nevertheless competent to perform their functions sufficiently for life and even health.

Relatively considered, the prognosis is by far the most favourable, if only the first of these different affections exist, and of the four remaining affections, the prognosis is the most unfavourable if the contracted or cirrhotic kidney be the existing disease. Here, then, is an illustration of the fact that diagnosis is an important prerequisite for prognosis. Now, is it practicable, with our present knowledge to diagnosticate the first of these five diseases, and to differentiate from each other the four remaining diseases? To consider the diagnosis, severally, of these diseases, would lead me beyond the limits to which this paper must be restricted. It must suffice to say that, although in certain cases, the antecedent circumstances, the symptoms referable to the urine, together with other symptomatic phenomena, the age, and co-existing affections, warrant a discrimination with considerable confidence; yet, in not a small proportion of cases, the differential diagnosis, with the means at present available, cannot be made with positiveness. Then another question arises: assuming the existence of either the smooth white kidney, the fatty kidney, the contracted kidney, or the waxy kidney, is it practicable to determine, in individual cases, whether or not the amount of lesion is consistent, or otherwise, with the ability of the organs to perform their functions sufficiently to warrant, as the prognosis, a duration of life and comfortable health for an indefinite period? This question cannot be answered affirmatively. It must be admitted that, with the means of investigation now at our command, we cannot gauge, with anything like precision, the extent of damage which the kidneys have received.

[There can be no doubt that in a certain proportion of cases of Bright's disease recovery takes place. Many of these are simply tubal nephritis, but some are instances of arrest of progress of more serious forms of disease, in which case the changes of structure may be tolerated by the system or may be entirely removed. Out of 108 cases observed by the author of this paper, there were good grounds for the opinion that recovery ensued in 22.]

2. *The prognosis considered with reference to the symptoms and complications in Bright's diseases.*—It is a well known truth that Bright's diseases, existing antecedently to various affections, may determine the fatality of the latter, when, *per se*, they might be expected to end favourably. This is true of pneumonia, the continued fevers, &c. Pre-existing disease of the kidneys will serve to explain the occurrence of certain events of the clinical history, and a fatal termination in cases of intercurrent affections not dependent on the renal disease, but merely coincident with it.

How do co-existing structural affections of the heart affect the diagnosis in Bright's diseases? The pathological relations between Bright's diseases and structural affections of the heart, cannot be overlooked in answering this question. These relations have been open for discussion from the date of Bright's discovery to the present time. I must content myself with stating, in a few words, the views which appear to my mind the most consistent with clinical facts. Simple hypertrophy of the left side of the heart, that is, hypertrophy not dependent on valvular lesions, is so extremely rare, exclusive of its occurrence in connection with renal disease, and is so frequent in this connection, that the association must be considered as involving a pathological relation. Again, hypertrophy of the heart dependent on valvular lesions being so frequent, and so often existing without renal disease, it is fair to conclude that, when simple hypertrophy is connected with renal disease, the hypertrophy is in the relation of a cause, not of an effect, of the renal disease. Assuming this view to be correct, it is not improbable, indeed it is probable, that the hypertrophy of the heart in this connection, as when it is an effect of valvular lesions, is compensatory or conservative. And if this be true, the co-existence of simple hypertrophy, to say the least, does not render the prognosis more unfavourable.

But in a certain proportion of cases, valvular lesions, with or without enlargement of the heart, are associated with renal disease. In view of their frequency, a certain allowance is to be made for mere coincidence in the association of these lesions with renal disease. Do these lesions ever result from renal disease? The affirmative to this question is not proven. Endocarditis is certainly not of frequent occurrence in Bright's diseases, nor is there ground for supposing that these diseases favour atheroma and calcification; and, exclusive of traumatic causes, these are the sources of valvular lesions. Assuming that endocarditis is sometimes an effect of renal disease, the duration of the latter is rarely sufficiently long for valvular lesions with enlargement of the heart to ensue, inasmuch as these are remote effects of endocarditis, as shown by their occurrence after acute articular rheumatism. On the other hand, considering the number of cases of valvular lesions, with enlargement of the heart, in which renal disease does not exist, it is doubtful whether the agency of the former in producing the latter is ever more than that of an auxiliary cause.

Finally, how is the prognosis affected by the co-existence of valvular lesions and enlargement of the heart with renal disease? In answer to this question, it may be said that the evils and danger which may belong to the cardiac lesions are added to those which belong to the renal disease. Valvular lesions *in this connection*, as when they exist alone, it is probable, are of importance, chiefly with reference to morbid effects after the heart has become dilated. Prior to this, they neither affect materially, nor are they affected by the renal disease. When they have led to enlargement of the heart, they may, as already stated, act as an auxiliary cause, increasing the disease of the kidneys; and, on the other hand, in proportion as the powers of the system become impaired by the renal disease, the ability to bear up against the cardiac lesions is lessened, and the danger from the latter is thereby proportionately increased.

Passing from the complications to the symptoms in Bright's diseases, for the purpose of condensation I shall embody my remarks in a few propositions. My purpose in doing this will, I trust, be a sufficient apology for an appearance of dogmatism. The prognosis, as regards symptoms, has reference to danger in two directions, namely: 1, From uræmic phenomena, meaning by this phrase, as heretofore, especially coma and convulsions; and, 2, Persistent and excessive dropsy, together with exhaustion.

Uræmic coma and convulsions are always to be considered as involving great immediate danger. Life may be destroyed within a few hours, and even within a few moments, from the occurrence of these symptomatic events. On the other hand, the patient may not only survive these events, but the recovery from the renal disease may be complete after their occurrence. Moreover, when the renal disease continues and progresses, the patient may survive repeated attacks of coma and convulsions; the attacks may recur after long intervals, during which there may be an appearance of recovery, inclusive even of the disappearance of albumen and tubular casts from the urine. The collection of cases which I have lately analysed furnishes striking illustrations of the correctness of these statements.

Vomiting and purging are evidently in certain cases uræmic symptoms, and generally this can be determined by diagnostic circumstances which it would be out of place here to consider. If these symptoms be persistent, they betoken danger of coma and convulsions. They may also involve danger in the direction of innutrition and asthenia. I have known death to be attributable to the exhaustion produced by persistent vomiting in a case in which attacks of coma and convulsions with violent delirium failed to destroy life.

A great amount of dropsy by no means in itself involves an unfavourable prognosis. This occurs in cases which end in recovery. But in proportion as dropsy persists, or if it speedily return after having been removed by therapeutical measures, its import is ominous. It is the more unfavourable as a prognostic if it be associated with notable anæmia and general prostration. Dropsy excessively disproportionate in certain situations, namely, the pleural cavities, the air-cells of the lungs, and the pericardium, may involve immediate danger to life from its mechanical effect. This is, of course, true of œdema of the glottis, which sometimes occurs when there is little or no anasarca. A disproportionate amount of peritoneal dropsy, in general, denotes the co-existence of cirrhosis of the liver, and this renders the prognosis unfavourable. The absence of dropsy is no evidence against the existence of lesions which involve danger from uræmic phenomena.

The symptoms pertaining to the urine are generally considered by medical practitioners too exclusively with reference to diagnosis. Examinations of the urine afford important information respecting prognosis. Waiving the consideration of microscopical characters, especially of tubular casts (which as entering into the differentiation of the several Bright's diseases, are thus indirectly important with reference to prognosis), prognostics, as regards urinary changes, relate to albumen and urea. There is no definite or uniform relation between the presence of albumen in the urine and the uræmic phenomena. While an abundance of albumen is by no means inconsistent with the occurrence of uræmic phenomena, a small amount is no evidence against the liability to these phenomena; and uræmic coma and convulsions may occur when the urine is devoid of albumen. There is, however, a relation between the amount of albumen in the urine and general dropsy. As a rule, to which there are exceptions, *albumen in the urine is abundant in proportion as the dropsy is great; and the disappearance of dropsy* is rendered improbable by the continuance of albumen in the urine in large quantity. In conjunction with the absence of other symptoms denoting renal disease, the disappearance of albumen from the urine together with casts, constitutes evidence of recovery; it is, however, an important fact that both albumen and casts may disappear from the urine, after the occurrence of uræmic phenomena, and the urine be free from these morbid constituents for several weeks, when the recurrence of fatal coma and convulsions, preceded by the return of albumen and casts in the urine, render it probable that renal disease existed notwithstanding the absence, for a time, of its diagnostic criteria. I have reported a case exemplifying the points just stated.

3. *The prognosis considered with reference to the treatment in Bright's diseases.*—We have no specifics to arrest or retard the progress of Bright's diseases. As regards the use of medicines, there is perhaps room for the belief that diuretics and cathartics, employed or continued injudiciously, not infrequently interfere with the objects of treatment now under consideration. To remove causes, if practicable, is of fundamental importance in the treatment of all diseases. But our knowledge of the etiology of Bright's diseases, excepting tubal nephritis, is singularly meagre. It is, however, of great importance to place patients, as far as possible, without the sphere of all appreciable morbific agencies. And it may be reasonably assumed that the progress of renal lesions will be most likely to be arrested, or if not arrested, their progress will be most retarded, by measures, medicinal and hygienic, which are the most effective in placing the different organs and functions of the body, and the organism as a whole, in the best possible condition.

But at this moment the most important point in the treatment of chronic Bright's diseases, with a view to arresting or retarding their progress, relates to climate. On this point, the facts contained in the late excellent work by Dickinson are very striking, and in their practical bearing they seem to me to be exceedingly valuable. Referring to Dickinson's work for full details, I will simply state that this author has brought together statistics showing the mortality from renal affections in different climates. The contrast in this respect between different climates is extraordinary. Comparing London and Paris with Bombay and Genoa, the proportion of deaths from renal disease to the total number of deaths in London, is 1 in 49, and in Paris 1 in 266; whereas, the proportion in Bombay is 1 in 2,800, and in Genoa, 1 in 4,308. Again, at the hospital in Milan, dropsy with diseased kidneys occurred, on an average, once in 2,807 admissions; whereas, in St. Mary's Hospital, London, the proportion was 1 in 31, that is, the frequency in the latter, according to these figures, is one hundred times greater than in the former. Further statistics, derived from the reports of the British army in different quarters of the globe, show the proportion of deaths from renal disease to be notably greater in temperate than either tropical or cold climates. Facts offer to show that, in the frigid zone, renal affections are extremely rare. These facts warrant the expectation, in cases of chronic Bright's diseases occurring in temperate climates, that arrest of the diseases, or retardation of their progress, as well as increased and prolonged intolerance of them, may often be effected by a timely change of climate. Certainly these facts afford a stronger foundation for such an expectation than do facts relating to tuberculous disease of the lungs for expecting the same results from change of climate in cases of the latter disease. With reference to the prognosis under this aspect, it is vastly desirable to collect a sufficient number of cases showing the results of a change of climate in Bright's diseases. Facts show a notable difference in the mortality from these diseases in different situations in temperate latitudes. For instance, Paris and London offer a striking contrast. So that changes of climate, not involving removal at great distances from country and friends, may affect materially the prognosis.—*New York Medical Journal, July*, 1869, *p.* 337.

36.—REMARKS ON THE TREATMENT OF DIABETES.

By Dr. F. W. PAVY, Senior Assistant Physician to, and Lecturer on Physiology at Guy's Hospital.

[The following short paper was elicited by a communication by Dr. Basham, on the treatment of diabetes by alkalies. Dr. Basham referred incidently to a case published by Dr. Pavy which had been treated by opium combined with bicarbonate of potash, as favouring his views of the use of alkalies. Dr. Pavy, however, considers that the alkalies had nothing to do with the rapid arrest of the discharge of sugar that occurred.]

I know of no medical agent capable of exerting a controlling influence over the complaint like that exerted by opium. In common with others, I have employed alkalies and ammonia largely in diabetes, and am well familiar with the kind of effect to be looked for. I have been of opinion that they produce a slowly beneficial action in the complaint, but never have I observed any immediate effect of a marked nature that could be attributed solely to their influence. With opium, on the other hand, the effect is so striking, that there can be no question of its reality. In my communication to the Clinical Society, besides the case above alluded to, two others were mentioned, in both of which the sugar was removed—in the one instance by opium, and in the other by morphia. In these cases, there was no agent administered. They were cases of the disease in middle-aged subjects. The sugar was reduced as far as it could be by a restricted diet; and then, under the influence of the morphia and opium, it was entirely removed.

There is also at the present time a patient at No. 1 bed in John ward, Guy's Hospital, a most instructive case bearing on the point in question. It is the same patient to whom I administered the ozonic ether without observing any beneficial effect, and whose case, in reference to this agent, I mentioned in the Lancet a few weeks ago. The man, a middle-aged person, was passing, under a restricted diet, about six pints of urine, containing upwards of three thousand grains of sugar, in the 24 hours. At first, after the ozonic ether had been discontinued, morphia was administered in gradually increasing doses, beginning with half a grain three times a day. The quantity of urine and sugar from day to day gradually declined, and, in the space of about three weeks, disappeared altogether; the quantity of morphia administered at this time being a grain and three-quarters three times a day. After a little while the morphia was taken off; and in a week's time the sugar began to reappear, and went on from day to day increasing. This state of things was allowed to continue for about a fortnight, when opium was given; and, under its influence, the sugar has again disappeared. I merely here allude to this case; the the patient being still in the hospital, may be seen by any one desirous of doing so.

Of what service as a curative agent, opium, in larger doses than it has been customarily given, may prove in cases in general, I do not at present pretend to say. Much more extended observation is required before this point can be determined. Whatever may happen to be disclosed by subsequent experience, it cannot be denied, I think, that we have before us an important therapeutic fact. The woman whose case formed the basis of my communication to the Clinical Society has been seen by me from time to time up to as recently as a fortnight back. She has taken no opium or other kind of medicine since October last; has been living (as she did when under treatment) upon an ordinary mixed diet; and has been passing urine devoid of sugar. Her case, in fact, up to the present time forms an example of a direct and perfect cure.—*British Medical Journal, May* 1, 1869, *p.* 398.

37.—EARLY SIGN OF NEPHRITIC IRRITATION.

Dr. OWEN REES has found that a valuable indication in the early stages of kidney disease may be derived from the presence in the urine of blood-extractives, which *may be recognised* before the appearance of albumen in that fluid.

The escape of the extractives shows that a constant and important drain is going on from the blood, and is to be regarded as a warning of approaching albuminuria. The *blood-extractives* may be detected by the addition of tincture of galls to the urine, which immediately precipitates the extractive matters. After five or ten minutes, the earthy and potash salts will be thrown down by the spirit contained in the tincture, so that it is necessary to remember that the reaction produced by the extractives occurs immediately after the addition of the tincture.—*Guy's Hospital Reports*, Third Series, vol. xiv., p. 431.—*Dublin Quarterly Journal, May*, 1869, *p.* 426.

38.—ON ALBUMEN IN THE URINE, SOMETIMES IN CONJUNCTION WITH THE COLOURING MATTER OF THE BLOOD, AS A CONSEQUENCE OF SURGICAL DISEASES AND OPERATIONS.

By Henry Lee, Esq., Surgeon to St. George's Hospital.

During the years 1837–8 I collected together several cases which occurred in the wards of St. George's Hospital, in which the urine was albuminous, but in which there was reason to believe that there was no disease of the kidneys. In most of these cases the presence of albumen was accounted for by the ascertained disease of the bladder or of the prostate gland. This, however, was not invariably the case. One instance in particular occurred, which left a permanent impression on my mind. A patient had albuminous urine, and in the absence of any ascertained disease of the bladder Sir B. Brodie diagnosed the affection as a disease of the kidney. An issue was ordered in the loins. The patient maintained that his back was sound, and that the disease was below, pointing to his perineum. Sir Benjamin told the patient that he must yield to his judgment upon the point. This the patient refused so to do, and backed his own opinion by leaving the hospital. What the result was in this case I had no means of ascertaining; but the constancy with which the man affirmed that the disease was not in his back led me to think whether, after all, he might not possibly have been right.

Many years after this I met in consultation, at Sir B. Brodie's, Dr. Owen Rees and the late Dr. Seth Thompson. The patient was an eminent and well-known engineer. He had albuminous urine. He was supposed to be labouring under disease of the kidney, and a most unfavourable opinion of his case was given. The patient went to Egypt, and returned apparently very much improved in health. He now worked night and day, and often retained his water for many consecutive hours. At the time when one of his greatest works was achieved he was seized with an attack of apoplexy, and died a few days afterwards. Upon a post-mortem examination, there was no disease of the kidney to account for the albumen in the urine, but a most remarkable condition of the right ureter was discovered. The ureter on this side was very much dilated throughout. About its centre was a hard knot, which, upon examination, was found to be caused by an intussusception of all the coats of the canal. At this part the ureter was not contracted; on the contrary, the little finger could be passed along it without disturbing the intussuscepted portion. The mucous membrane here was intensely vascular. It was no doubt from this congested knot that the albumen, which for many years had been present in the urine, was derived. The post-mortem examination in this case was conducted by Mr. Charles Hawkins and myself.

During the last year I read before the Clinical Society a paper in which I gave the details of a case in which a large quantity of albumen was habitually present in the urine. This patient had caries of one of the bones of the forearm and of one of the ribs. The case I regarded as having its origin in specific disease. Under specific treatment the affected bones were restored, and after a time the albumen entirely disappeared from the urine. When this case was read, some of the most eminent pathologists present were disposed to look upon the presence of albumen in the quantity described, as indicative of *disease of the kidney.* This disease they supposed must have been cured by the specific treatment. On the other hand, I was inclined to regard the presence of albumen in the water as a consequence of the disease which was going on in other parts of the patient's system.

Quite recently two cases have come under my care which have appeared to me to demonstrate that when the blood is contaminated in consequence of accident or disease, albuminous water may be the result, without any organic disease of the kidney. The albumen in such cases, together with the colouring matter of the blood, may escape in very considerable quantities.

Case 1.—W. R., aged 22, was admitted into St. George's Hospital, under my care, on the 25th of April, 1869, for varicocele.

On the 6th of May I performed the usual operation for that disease. There was some slight bleeding at the time.

The following day (May 7th) the skin between the needles had become greatly distended by the effusion of blood. The skin over the effused blood sloughed on the 8th, the pulse was 112, and the tongue furred. The next day the urine had assumed a dusky-brown colour.

May 10th. The urine was of the colour of decoction of sarsaparilla; it contained an abundant deposit, and was albuminous.

11th. The urine passed in the morning was almost black. That which was voided in the afternoon was "smoky." He was now better. Pulse 86; skin natural.

13th. The slough between the needles was separating. Urine still albuminous.

14th. The urine was now almost clear, and contained no albumen.

The wound healed readily; and the patient was discharged on the 2nd of June.

Dr. Beale was good enough to examine for me the urine passed in this case. He reported that "the black and almost opaque urine was of specific gravity 1030. It contained, in 1000 grs., 71 grs. of solid matter. The deposit consisted of triple phosphate and globules of urate of soda. The black colour was not due to blood-corpuscles, but to colouring matter adherent to very minute granules of urate diffused through the urine, but not in solution. When the urine was evaporated, the extract had the ordinary appearance, and exhibited no unusual colour whatever."

I had an opportunity of seeing this patient and examining his water during the third week in July. He was then in perfect health, and his urine quite natural and free from albumen.

Case 2.—A. C., aged 40, was admitted into St. George's Hospital on Jan. 2nd, 1869. Five years previously he had been wounded by a musket-ball in the lower part of the neck. The wound healed, and he resumed his duty at the expiration of seven weeks. After a short interval, however, several abscesses formed in the neighbourhood of the old cicatrix; these gradually destroyed the greater part of the soft tissues on the right side of the neck. No fresh abscess had, however, formed for the last four years, but during that time he had suffered much from what he called rheumatism. On Dec. 31st, while stretching his neck in shaving, he felt an unusual sensation. The next day there was a swelling at the part, which he supposed to be a boil. This swelling gradually increased; it pulsated uniformly over its whole surface, and the skin covering it became quite black. The common carotid was tied on Jan. 8th, 1869, and a drawing of it was made on the 11th.

My clinical clerk had tested the water in this case previous to the operation, and had found it free from albumen.

Jan. 13th. A drop or two of blood oozed through the skin covering the tumour, which was reduced in size, and had entirely ceased to pulsate.

14th. The urine was of a very dark colour, and very albuminous.

15th. Dr. Ogle, who was good enough to see the patient with me, reported that "the urine was very albuminous. It contained no casts of the uriniferous tubes. Its specific gravity was 1029. It contained no appreciable amount of sugar." Some puriform fluid, containing broken-down coagula, was discharged from the wound.

16th. The wound was looking well, and appeared to be healing.

A second drawing was made on the 13th of February, when there was very little discharge from the wound, which had nearly closed. The patient never, however, regained his general health. The albumen in the urine continued. He suffered much from pain in the chest and upper part of the abdomen. He gradually became much emaciated, and died. Unfortunately no post-mortem examination could be obtained.

Independently of the cases which have fallen under my own care, I have known of others in which, after a surgical operation or disease, the urine has become albuminous, and sometimes has remained so for a very considerable period. I have also been informed of two cases in which the urine at the same time became very dark-coloured, and was supposed to contain blood. The cases which I have given, although few in number, are, I think, sufficient to show that albumen in large quantities may be present in the urine as a secondary affection dependent upon disease in some distant part. Such an affection must be carefully distinguished from any local disease capable of producing albumen in the ureters, bladder, or urethra. In both classes of cases the albumen may be produced independent of any organic disease of the kidneys, and in both it may be mixed with the colouring matter of the blood. From the cases which have come under my notice I am inclined to believe that in the first class the colouring matter of the blood is found independent of any blood-corpuscles; and that in the second the colour depends upon the blood-globules themselves. All the cases which I have known in which the peculiar colour of the urine, to which I have drawn attention, has accompanied the secretion of albumen as a secondary affection, (independent of any disease of the kidney, and independent of any affection in the urinary channels themselves,) have been instances in which there was evidence, more or less distinct, of coagula having formed in some part of the vascular system. These coagula have been disintegrated and removed. The colouring matter of the blood has disappeared with the other portions of the coagula; and when we find this same colouring matter reappearing in a disintegrated form in the secretion of the kidneys, we are justified, I think, in concluding that the matter so eliminated formed part of the coagula which had been disintegrated, and removed in the course of the circulation.—*Lancet*, *Aug*. 21, 1869, *p*. 262.

SURGERY.

BONES, JOINTS, &c.—AMPUTATIONS, FRACTURES, DISLOCATIONS.

39.—ON DISEASES OF THE JOINTS.

By Thomas Bryant, Esq., Assistant-Surgeon to Guy's Hospital.

Putting aside for the present disputed points of pathology, and for future consideration the subject of tumours involving joints, it may, in all truth, be stated that disease of a joint generally commences in one of two tissues, the osseous or the synovial, and that either an acute or chronic inflammation of the bone or synovial membrane is the origin of most joint diseases. It is true that, in the progress of any case, both tissues may become eventually involved, and when disorganisation of a joint has taken place, both bone and synovial membrane will be necessarily affected; but the extent to which either tissue will be involved will depend greatly upon the seat of the original disease. When the disease begins in the synovial membrane and disorganisation of the joint follows, the articular cartilages may disappear, and the bones may be involved, but the disease will, in all probability, affect only their articular facets with the parts immediately beneath—it will rarely involve the deeper parts. But when the bones are the original seat of disease, and the inflammatory process has spread from these to the synovial membrane, and disorganization of the joint has taken place, the chief pathological changes will be seen in the osseous tissue, and will involve either the whole or a part of the articular epiphysis, if not a portion of the shaft. In short, when disease commences in the synovial membrane and disorganisation of the joint follows, it is in that tissue the greatest change will be seen; and when it originates in the bones, it is there that the greatest pathological changes are to be witnessed. Under both circumstances the cartilage covering the articular facets will have disappeared, although in the affection of the bones the cartilages are shed more rapidly, for the articular cartilages derive most, if not all, of their nourishment through the bones, and, as a consequence, any perversion of nutrition and inflammatory changes of the bones at once show themselves in the cartilages.

Practically there is no such thing as a primary disease of the articular cartilages—no such thing as so-called ulceration of cartilage independent of disease of other tissues. When the cartilages undergo a change, that change is always secondary to some other affection: when of the synovial membrane, the change is slow and partial in its action; when of the bone, rapid and complete. It should, however, be remembered that disease in the synovial membrane of a joint cannot exist for any period, or be of any severity, without involving the ligaments with which it is connected, or the cellular tissue with which it is surrounded. Nor can inflammatory disease exist for any time in the articular extremities of a bone without affecting more or less the periosteal membrane with which it is so intimately associated. Nevertheless, I believe that clinically it is important to bear in mind the distinct origin of the disease in one or other tissue, and that a correct treatment must rest upon our diagnosis. I hope to prove this in future papers.

Before proceeding to consider the changes the different tissues undergo from the inflammatory process, it will be well to ask the question, with a view to its solution, whether there be such a disease as strumous disease of a joint—strumous disease of the synovial membrane or of the bone.

If we were to *answer this* question according to custom, as indicated by the free application of the term to joint disease, I should unquestionably say that it was a common affection, for there are few chronic changes of a joint that are not so designated; indeed, it is rare to meet with any chronic affection of a joint in a delicate child which is not regarded by a medical practitioner as a strumous disease. I have often thought that the constant use of the phrase would lead any one to believe that term strumous disease had some definite meaning, that it conveyed some definite idea from the mind of its employer to those who heard it, that the affection so designated was of a special kind, and was to be recognised by special features, and that it possessed definite pathological characteristics. Yet it can hardly be said that such is practically the case; for if we look for the points of difference between the so-called strumous disease and the chronic inflammatory affection we shall fail to find them. They are not clinically to be distinguished. They are not practically to be separated. Indeed, I am more than satisfied that the so-called strumous disease of a joint is nothing more than a chronic inflammation of the bones or synovial membrane, or both; that the pathological changes in the affected tissues are such as are clearly traceable to a low form of inflammatory action, and that they differ in no single pathological point from the inflammatory changes found in other parts. It is true that such affections are of a low type, and in that respect they differ from other inflammatory actions of a more healthy character, but that they are nevertheless inflammatory there can be no doubt. Practically, therefore, it would be well to expunge this term, strumous disease of a joint, from our vocabulary; for its use certainly misleads by making the student believe that the term has a definite meaning when it has not, and by encouraging the idea that the disease to which it is applied has more a constitutional than a local origin, and is consequently incurable. Of this, however, I am quite sure, that so-called strumous disease of a joint is, as a rule, as curable as any other affection; that it is as amenable to treatment as any other chronic inflammatory disease. In saying this, however, I do not dispute the fact, that, pathologically, we do at rare intervals find tubercular deposit in some of the tissues building up a joint. When present it is generally found in the bone; but I must repeat again, what I wrote ten years ago in my work on diseases of the joints, that such preparations are to be regarded as pathological curiosities—they are so rare. They are discovered also accidentally, and are not clinically to be recognised by any characteristic features from other cases of chronic inflammation of the bone. It would be well, therefore, to give the term up in scientific discussion, or, if it be used at all, to use it in the same broad sense as the words tumors, rheumatism, and fever are now employed, as a broad general term that includes many affections and covers much ignorance.

On the Pathological Changes which take place in the Synovial Membrane from Inflammation.—In a pathological point of view, inflammation of the synovial membrane may show itself in two distinct ways—firstly, in change of function, and, secondly, in change of structure. The first change may take place without the second, but the change of structure necessarily includes an alteration in the function. We see this in every-day practice, for in the ordinary run of cases of so-called chronic or subacute synovitis, excess of secretion in a joint is the main symptom, and this secretion may be reabsorbed and leave no trace of disease behind. These cases may be regarded as examples of the first class of cases, in which a change of function is the most prominent point. As illustrations of the second class, in which change of structure is the main point of clinical as well as of pathological importance, the pulpy disease of the synovial membrane naturally presents itself. Between the two great classes of cases, however, there are doubtless many links—for example, in acute synovitis we have change of structure even to disorganisation more or less complete, and in chronic synovitis, frequently repeated, we have change of structure such as gradually passes into the pulpy synovial disease; this term including all the cases of pulpy or gelatinous disease of the synovial membrane. It would thus appear that in acute inflammation of the synovial membrane we have pathologically a series of changes that are somewhat different from those seen in a chronic inflammation, and in a clinical point of view the same distinction is to be drawn. The acute form passes, it is true, into the chronic by imperceptible gradations, but the two classes of cases are, nevertheless, very distinct. Let us now consider what these changes are, and first of all with respect to acute inflammations. Now acute inflammation of a synovial membrane is clinically represented by increase of secretion, severe local pain, and heat with symptoms of surgical fever. Pathologically it is represented by what my notes of cases clearly illustrate—a more or less minute injection of the capillary vessels, passing on to a velvety appearance of the synovial surface, a flocculent surface, or one covered with fimbriated fringes of lymph. In the still more acute cases the synovial membrane may have disappeared by ulceration or sloughing, or have so softened down as to be destructible on the slightest touch. In such cases as these acute suppuration of the joint will probably be present, and the synovial membrane may show any one of the conditions already indicated, or it may have disappeared, pus and broken-up membrane alone remaining to indicate the local severity and the destructive nature of the affection.

In less acute cases other changes may be seen, although they are not less marked. In one instance, the notes of which are before me, it appeared as a local patch of capillary injection—an injection which was visible to the eye, and which was attended with a superficial granular change of structure in the cartilage with which it was connected. In another it showed itself by the effusion of a firm fibrinous layer of lymph over the surface of the synovial membrane and articular cartilage. This membrane could be raised from its bed and peeled off—not only off the synovial capsule, but also off the articular cartilage—and beneath this membrane fine radiating capillary vessels were clearly visible, passing from the margin of the articular cartilage towards the centre. In this case, after a section was made through the spot of injected membrane and cartilage down to the bone, the swollen layer of membrane passing over the cartilage was clearly visible, as well as the granular degeneration of the cartilage beneath; for this membrane could be separated from its cartilaginous connexion by means of needles.

This case occurred in a child, but it seems to me to be enough to prove by means of pathology what anatomy has hitherto failed to settle—that a layer of membrane passes over the articular surface of articular cartilage. I have seen these changes more than once.

The changes that take place in the synovial membrane in subacute and chronic synovitis remain now to be noticed. They are essentially of the same pathological character as are those we have just been considering, but they differ in this great point—that the synovial membrane is not destroyed, but becomes changed. It becomes thickened in various degrees by the infiltration of inflammatory product within its walls and upon its surface. This thickening may be so great that the synovial membrane may be represented by a tissue an inch in diameter; but this will only be found in cases in which repeated attacks of inflammation have taken place, and many layers of lymph have been deposited upon and in the affected tissue. These layers may not be deposited rapidly one after another by consecutive attacks of chronic inflammatory action, for they may be the result of disease which has spread over many years, but they will always represent an inflammatory action of a chronic nature which has at uncertain intervals attacked the joint, and on each occasion left behind it pathological evidence of its presence by an inflammatory infiltration.

It is with such changes as these that all cases of the gelatiniform or gelatinous disease of the synovial membrane, as well as the pulpy disease of Sir B. Brodie, are unquestionably to be classed. Both are of the same nature pathologically and clinically—at least, all my own investigations have led me to this conclusion. Ten years ago, when writing upon the point, I suggested that such might be the case, but did not feel sufficiently certain to assert it. All experience since then has, however, led me to the conclusion, and I know of nothing that militates against the idea. In the present papers I shall therefore employ the word pulpy disease of the synovial membrane to designate the disease. It is short and as expressive as any other. It is likewise a term with which the profession is familiar.

The Clinical Features by which these Pathological Changes may be recognised.—It will have been remarked that, in all the pathological changes we have been describing, excess of secretion, or effusion into the joint and synovial membrane, invariably occurred. It may, moreover, have been observed that these changes were the earliest, or, at any rate, were very early, results of the inflammatory action. Clinically, therefore, the most marked symptom that characterises synovitis in any of its forms is enlargement of the joint, either from effusion into the articulation, thickening of the synovial membrane itself, or both conditions combined. In the superficial joints, such as the knee, elbow, ankle, wrist, all these changes are readily to be seen, and when seen, are readily recognised. In the deeper joints they are also present, and are to be made out on a careful clinical examination.

This is the main point I would wish to be remembered in connexion with this subject.

On the Pathological Changes the Articular Cartilages undergo from Disease.—The most important point the practical surgeon has to recognise when considering the pathology of the articular cartilages has reference to the fact that there is no primary disease of this structure, for pathological anatomy teaches us that all the changes that are to be found in it are secondary to some other affection, and in the generality of cases to disease in the articular extremities of the bones. There is no such thing, therefore, as primary "ulceration of the cartilages," and when the cartilages are diseased they are so from the extension of mischief from the bone beneath or from the synovial membrane about them.

Much has been written about diseases of the cartilages, under the idea that they were liable to special diseases; and much error in joint pathology has crept in as a result. The authority of great names, such as Brodie, Key, and others, has helped to encourage this idea. But modern investigation, as carried out by Redfern, Goodsir, and others, has corrected this erroneous notion, and an improved pathology has clearly shown that the diseases of the cartilages are due to diseases of other tissues.

When describing the results of my own investigations ten years since, I divided these affections into the fatty, the fibrous, and the granular degenerations, and nothing that has been observed since has led me to doubt the accuracy of this division; indeed, additional experience has confirmed me in its truth. I am not about to enter, however, in this place into a minute description of these different changes, for they are to be read elsewhere; but it will suffice for my present purpose to remind my readers that the fatty degeneration of the articular cartilages is found in joints that have been deprived of their natural functions from any cause—from non-use in the majority of cases, but in many from bad nutrition—that is found in common with the same change in the bones of other tissues. This fatty degeneration is to be recognised with tolerable facility by the naked eye, for the cartilage, instead of possessing its natural white pearly aspect, will appear somewhat transparent; its surface will probably present an undulating, unequal, although smooth surface; it will, when cut, feel softer than usual, and may be three or four times its natural thickness. At times it may even be pulped by firm pressure with the finger, and it may be separated from the bone with more than usual facility. Microscopically it will present also characteristic features. The natural cartilage corpuscles will have become changed into fat and granule cells in various degrees; the hyaline matrix will be filled with cavities, varying from the healthy standard to large cells. These cells will be filled with more or less of the elements of fatty degeneration, in which the healthy corpuscles will have changed into fat cells, and the hyaline matrix will have changed more or less into an irregular cellular fatty matrix. This fatty degeneration takes place in most joints that have not been used, but rarely from disease of the joint itself. When present in a joint that becomes the subject of inflammation, disorganisation of the articulation rapidly follows, for such a lowly organised degenerated tissue has no power of resisting disease, and when brought into contact with it rapidly disappears.

The Fibrous Degeneration of the Articular Cartilage is a disease of a peculiar character. I believe it to be associated with only one disease of a joint, and that is the so-called "chronic rheumatic arthritis." It is very gradual in its progress, and is not characterised by any definite symptoms. It is to be recognised pathologically in a joint in its earliest stage by the loss of the natural glistening aspect of the cartilage, the smooth surface of which disappears, and it looks rough. Small fissures next appear, involving more or less of its thickness, and sometimes these extend down to the bone. These fissures are, as a rule, thicker in the centre, and at times radiate outwards; the cartilage seems gradually to thin, and after a time to disappear, exposing the articular surface of the bone, which will probably have undergone the calcareous degeneration. Microscopically the chief change that is seen in this disease is the gradual alteration of the hyaline structure into fibre. The cartilage corpuscles at the first are found interspersed between these fibres, but at a later date these corpuscles will be seen to have changed into granules. At the last stage nothing but fibres may be found, and when this condition exists, the rapid disappearance of the structure altogether will not be far distant.

The Granular Degeneration of the Articular Cartilage is the most important affection of this tissue we have to study. It is the one most commonly found in joint affection, and seems to be the direct consequence of a perverted nutrition in the bone or synovial membrane, the result of disease in one or both of these structures. Although of a simple nature, it shows itself in many ways, and without microscopical investigation must have appeared unintelligible. In its different forms it has doubtless led good observers to describe it as an ulceration of cartilage, for under certain conditions the cartilage presents a worm-eaten excavated appearance, not unlike that which ulceration might produce.

The disease is essentially a granular degeneration, first of the natural cartilage cells which are imbedded in the hyaline matrix, and secondly, of the hyaline matrix itself. Let a cartilage cell undergo this granular degeneration and the granules by accumulation and multiplication form a cavity in the hyaline matrix; then let this cavity burst on the surface of the cartilage into the joint, and an excavation which can be seen by the naked eye becomes at once visible, and a so-called ulcer is produced. Let this change take place towards the margins of the articular cartilage and we find an explanation of Mr. Key's observations upon so-called ulceration of this tissue in certain forms of inflammation of the synovial membrane of the joint. Let this change take place near the bones as a result of disease in the epiphyses, and we find an explanation of the general condition of the cartilages in the bulk of joint diseases; for when the bones entering into the formation of a joint are so affected as to interfere with the nutrition of the articular cartilages, the cartilage may either present the worm-eaten appearance all over or in part, or it may have been shed from its bony attachment, when it will be found to be lying upon the bone as a foreign body in the joint. In an early stage of disease, this granular degeneration may only be detected by a microscopical examination, although, when the bone is the cause, it will always be found to peel off its articular facet with unusual facility.

In synovitis also the surface of the cartilage in contact with the inflamed membrane will be found similarly involved. Should the disease be local, as is at times seen in cases of injury to an internal ligament, such as the ligamentum teres, the change in the cartilage will be local only, but when general, the whole surface of the cartilage may be involved. In acute disease acute degeneration follows, as daily practice gives good evidence.

On the Pathological Changes in the Bones the Result of Inflammation.—Inflammation of the articular extremities of a bone is a very common disease; it is probably the most common we have to deal with in connexion with joints, for it would appear to be the cause of most, if not all, of those cases of disease of the articulations which we find in children, and which have been described as strumous or scrofulous disease of a joint. Ten years ago, when describing the results of my investigation of this affection, I stated that "I cannot for one moment doubt that the majority of the cases which are described by surgeons as strumous or scrofulous disease of a joint and of the articular extremities of the bones, depend upon a chronic inflammation in the bone," and all the experience I have gained since has tended to confirm me in this opinion. I believed then, as I believe now, that the disease is in its origin and progress inflammatory, and that it is as curable as any other local affection. I am convinced that the presence of tubercular deposit in the bone is a very rare occurrence, and that, when present, it alters but little the natural progress of the disease, although it may render the case less amenable to treatment. It is important to bear this truth, if such it may be called, invariably in mind when examining or treating a case of disease of a joint, particularly when it is found in a so-called strumous or cachectic subject, for if we regard the disease as a constitutional one we are too apt to think that it is to be treated on general principles and to neglect the local means by which alone a good recovery is to be secured. For my own part, I would abolish the term strumous disease of a joint altogether. It is based on a wrong pathology, and unquestionably suggests a wrong treatment. Let the surgeon recognise the true inflammatory nature of the disease, and be convinced of its curability by local and general treatment. He will then surely be more successful in his practice, and better results by treatment on the expectant principle will unquestionably be obtained.

Let us now, then, proceed to inquire into the changes that the bone undergoes during this inflammatory or wrongly called strumous affection.

The most striking is probably the earliest, and that is the expansion of the articular extremity. In some cases the enlargement will be very great, and it is generally uniform. The articular extremity of the bone affected, and, indeed, the epiphyses of all the bones entering into the formation of the joint, will appear to be rounded and generally enlarged. Upon making a section of a bone thus affected it will be found softer than natural; it may probably be so soft as to allow a knife to divide it. It may even break or crush on firm pressure being made upon it. To the eye the section will appear more vascular than natural, the cancellated portions to be more cancellated, the cells to be enlarged, and the bony septa to radiate from the shaft in a broad palm-like fashion. The cells also will be found filled with a pinkish serum.

Should the disease continue, and the inflammation be of a healthy type, parts of the bone will appear denser and more indurated than the remainder. The cancelli will have been filled with inflammatory product that has organised, and will appear on section as a dense and apparently bloodless mass, surrounded by other vascular cancellated tissue. Should the inflammation be of an unhealthy character, diffused suppuration within the bone will take place, and death of the bone, wholly or in part, follow.

Under these circumstances, the disease will probably have become a genuine joint affection—that is, it will have extended to the synovial membrane of the joint, and have set up disease within its substance. This extension of disease will show itself by effusion within the joint, and by pulpy thickening of the synovial membrane and of the cellular tissue around the articulation. Up to this point the disease has been a local one, involving only the articular extremities of the bones, and has not attacked the proper joint structures; it appears also to be perfectly curable. But at this stage of the disease the articular cartilages will probably become affected; for when the inflammatory action has continued for any period, and has not shown any indication of subsidence, but, on the contrary, has either assumed an unhealthy character or has interfered with the nutrition of the articular lamella of bone upon which the cartilages rest, the articular cartilage will to a certainty undergo the granular degeneration upon its surface in apposition with the bone, become loosened from its attachment, and be thrown off or shed, or it may degenerate in patches, and present to the eye an irregular excavated surface. If the disease be slow, the cartilage will degenerate slowly, and be as slowly loosened from its osseous base. It will then be readily lifted off the bone by any instrument. If the disease be more rapid, the cartilage will be shed likewise more rapidly, when it will be found lying on the bone as a foreign body in irregular patches, which, under the microscope, will appear to have undergone the granular degeneration.

When the disease is acute the cartilage may disappear altogether, having been shed from its osseous base and become rapidly degenerated.

The articulating surface of the bone during this time may appear in some cases only extra-vascular, as in inflammation; in others it may be rough, or so-called ulcerating; in a third class the articulating facets will have been shed wholly or in part. In another, pieces of necrosed bone involving more or less of the articular extremity of the bone will be seen. In another, an abscess will have made its way into the joint from the diseased articular extremity. But in all these conditions the cartilages will have disappeared and the joint become disorganised.—*Medical Times and Gazette, June* 12, 1869, *p.* 622.

40.—ON EXCISION OF THE KNEE.

By T. Holmes, Esq., Surgeon to St. George's Hospital; Surgeon-in-Chief to the Metropolitan Police.

[As Mr. Holmes has been quoted against the operation of excision of the knee, we think it right to give his own statement of opinion.]

I do not wish here to spend time upon controversial topics, which have, I regret to say, at times led to almost personal feeling; but I should not be stating the case fairly, if I did not say, with reference to the first of the three points above mentioned, that I believe excision to be a more severe operation than amputation, more immediately dangerous to life, and requiring a longer time for convalescence. I have repeated this opinion in several different publications, and have, strangely enough, been represented on this account as an opponent of the operation; the fact being that I have never willingly lost an opportunity of performing it. But, however impressed we may be with the advantages of an operation, that ought not to blind us to its severity, otherwise we shall be in danger of giving a very fallacious prognosis to our patients, and of exposing ourselves to constant disappointment and self-reproach. Far, indeed, from being an opponent of the operation, I am so sincere an admirer of it, that I believe it able to bear the truth to be told about it. I sincerely believe that it has, as practised hitherto, been more fatal than amputation; and I can see no reason whatever why it should under any circumstances be less fatal than that operation, it being in my judgment a proceeding of at least equal if not of greater severity. But even if I thought that excision would always continue to prove more fatal than amputation, I should still practise it, because I think its results, when it succeeds, are so good, that we are justified in running some extra risk to secure them.—*Dublin Quarterly Journal, Aug.*, 1869, *p.* 172.

41.—DESCRIPTION OF AN IMPROVED SPLINT FOR THE LOWER EXTREMITIES.

By Dr. D. W. Williams, Bangor.

Having constructed an apparatus, or universal splint for the lower extremities, acting on quite a novel principle, I am induced to bring it before the notice of the profession. I was led to turn my attention to the subject from the difficulty often experienced in country practice with splints in common use, amongst which may be enumerated Liston's long splint for fracture of the femur (which cannot be too highly estimated in the hands of the experienced, possessing ordinary mechanical ingenuity, under favourable circumstances), owing, particularly in union practice, to paucity of room, and ill-constructed bedsteads, with beds and mattresses of anything but even surface. Also the less frequent visits, necessarily arising where the distance is considerable, place the patient in a position very unfavourable as compared with that of those living in towns, or enjoying the advantage of treatment in hospital, the inmates of which are always under the immediate supervision of the medical attendant; so that with the best-directed efforts, and proper application of splints, deformities will sometimes take place in country practice, in the hands even of the most expert and experienced.

Without in the remotest degree wishing to detract from the many ingenious contrivances for fractures of the lower extremities, I feel convinced that my splint, from the simplicity of action and universal adaptability, will obviate the necessity for any other form.

It is made of three pieces of deal board 3½ feet long. The lower one, which I propose to call the *leg-rest*, is scooped out internally, for the thigh and leg to lie on smoothly; externally, it is flat, to rest evenly on the bed. Two side pieces, about five inches long, are glued on each side of the upper end of the leg-rest, forming a lunated crutch at their free extremity, completed by the free upper extremity of the leg-rest. This crutch is well padded with sponge, covered over with wash-leather tacked to the splint, which forms an easy resilient cushion to surround the upper part of the thigh, resting against the fold of the nates, and embracing the side of the perineum, the rami of ischium, and the pubes.

This is the most important part of the apparatus, and one for which I claim novelty of construction and action; not being aware of any other extending power but that of the perineal band from the pelvis, whereas in my apparatus the action is reversed, the perineum and pelvis forming the point of resistance from extension by screw action from the foot. Two mortices will be seen at the juncture of the leg-rest and crutch-pieces, about two inches long, on each side, for the passage of a silk handkerchief or bandage to secure the upper part of the thigh well to the splint.

From these lateral *crutch-pieces* there are two side splints tapering off to the heel, but divided about the centre at the knee-joint, to allow of their independent action, and attached to the leg-rest, at either extremity, by hinges, which are convenient for unfolding to dress the limb in compound fractures, &c., or to allow of bandaging the limb to the leg-rest in very thin subjects. There are also two sets of mortises at the knee, on each side, for the passage of bandages to secure the limb for extension in cases of fracture of the leg. There is a long thin mortise extending from above the knee to nearly the crutch-piece on either side, measuring six or seven inches between the hinged parts, for the passage of three folds of bandage, sewn together six or seven inches wide, one end of which is first tacked below the slit on one side, passed through, over the front of the thigh, and through the slit on the other side, from within outwards, to be secured below by a few tacks, or brought round to the front again and there secured. Padded auxiliary splints may be found useful or necessary in fractures at either extremity of the femur, placed under this and the crutch bandage, and firmly secured.

There is at the extreme end a thick piece of oak board, placed transversely, below the centre of which a long wooden screw passes through a female screw, to be attached to the foot-board, which slides on the sides of a space of about twelve inches long, by two and three-quarters broad, sawn out of the leg-rest, to allow of any disparity in length of limb, and broad enough for the heel to move in freely.

The foot being secured by a few turns of bandage round the ankle and instep, cotton wadding having been first folded on the ankle and foot, the limb is fixed to the footboard, first by passing the bandage through the notches on each side near the heel, which prevents it from slipping upwards, and afterwards bandaging the foot securely to the board up to the toes. The crutch-bandage having been made secure, extension is made by steadily unscrewing the screw—rather a primitive, home-made contrivance, which could doubtless be improved upon, both as regards elegance and facility of application, by some of the London instrument makers. A thick board is placed transversely below the centre, eighteen inches in length by twelve in breadth, which prevents the possibility of any displacement, or rolling on the most uneven surface. Any extemporised piece of board would answer the purpose, so that *it is not absolutely* necessary it should be fixed to the splint, which makes it less portable. There are hinge joints between the heel and foot boards, to allow of its being folded into the splint for portability.

To recapitulate. I claim for the apparatus—

1st. Ease of application in the hands of the inexperienced, and those wanting in mechanical skill.

2nd. The even, regular, general support afforded by Macintyre's splint, or double inclined plane, together with extension, so that both limbs can be always compared as to length.

3rd. Very superior advantages in affording means of dressing in compound fractures and resection of knee-joint, without relaxing extending force.

4th. Nicely adjusted screw-extension power.

5th. Adaptation to any fracture, from hip-joint to ankle, to any length of *adult* limb, and to both sides.

6th. The very gradual, easy screw action, rendering extension in hip-and knee-joint diseases highly advantageous, preventing tension, and attrition of the inflamed articular surfaces, with the general and regular support the splint affords. The former on the principle inculcated first, I believe, by Paget and Prescott Hewett, and practised, by weights and pulleys, in the case of the Princess of Wales; the latter on the principle of *rest*, advocated by Scott, and more recently, in a most able and exhaustive manner, by Hilton.

7th. Aneurismal clamps may be fixed to any part of it.

8th. Subjects with excessively feeble circulation can be treated without the fear of sphacelus from tight bandaging, or indeed without any bandaging whatever, if in any way contra-indicated.

The thigh-piece is fitted with two lateral pads, made of soft swan's-down calico, stuffed with two layers of cotton wadding, joined together in the centre by one layer of the same material four or five inches wide, which is tacked to the floor of the leg-rest. The free edges of the lateral pads are made to project somewhat over the edges of the side splints, and loose, to allow of any soft material being placed between them and the splint, and for the bandages, &c., to pass through the slits. The leg-piece is supplied with the same.

To conclude: shortening or any other deformity is rendered almost a matter of impossibility with ordinary care, thus depriving bonesetters, and their abettors, which are not a few, of the extreme felicity of chuckling at the practitioner's failure—a frequent result, however, of their own malpractice, but which, with accustomed proclivity for quackery in general, the public so readily ignores. I am not without hope that my humble efforts may assist, in a slight degree, to reduce deformities to *nil*, which, it cannot be denied, although often unavoidable, are standing opprobria to the qualified practitioner.—*Lancet*, *Aug.* 21, 1869, *p.* 265.

42.—CASE ILLUSTRATING THE ANTISEPTIC TREATMENT OF WOUNDS.

By E. R. BICKERSTETH, Esq., Surgeon to the Liverpool Royal Infirmary.

Aneurism of the carotid; Hunterian operation, with antiseptic catgut ligature, both ends being cut off; complete primary union within a week; cure.—William R., aged 32, was admitted into my wards on the 3rd of April, suffering severely from aneurism of the right carotid. It had originated near the bifurcation twelve months before, but had not enlarged materially, or caused any serious inconvenience, till three weeks before admission, when a sudden increase took place, due probably to rupture of the sac. When admitted, the tumour was the size of a large orange; it overlapped the angle and base of the jaw, and extended downwards to within an inch and a half of the top of the sternum. Its lateral dimensions were equally extensive; and internally the tumour encroached on the pharynx so much that the unfortunate patient was almot unable to swallow or to speak. He was continually expectorating his saliva, and was in such pain and distress as to be unable to lie down or sleep. His pulse was constantly above 100, and his countenance indicative of great distress.

Aconite, digitalis, and opium were severally administered, and alike failed to afford any relief; and as it was evident that the man had not many days to live unless relieved, I determined to tie the common carotid without delay. Even this measure afforded but slight prospect of cure, for symptoms indicative of perverted action in the brain had already set in. On the day before admission, his sight, previously good in both eyes, had almost gone from the right one; the pupil was dilated and nearly insensible, and there was a slight divergent strabismus.

On the 6th of April I tied the common carotid, about an inch and a half above the sternum, with fine catgut previously prepared with carbolic acid, according to the directions of Mr. Lister. The operation was more difficult and tedious than usual, owing to the limited space and to a peculiar arrangement of the blood-vessels. The aneurism-needle was, in the first instance, passed round an artery fully as large as, and exactly in the situation of the carotid trunk; and I was about to encircle it with the ligature, when I observed that its compression in no way influenced the pulsation in the aneurismal tumour. A little further examination and dissection then revealed the true carotid, which lay exactly in the same plane as, and parallel to, but outside the vessel before denuded. It was very much enlarged, being as big as the forefinger between the second and third joint. Around this the ligature was safely carried, tied tight, and both ends cut short off. During the operation care was taken that all sponges and everything used were washed with carbolic lotion (one part to forty of water). After all oozing of blood had ceased, the edges of the wound were brought together by several silver sutures, washed again with carbolic lotion, and neatly adjusted; and then a piece of lint, three folds in thickness, and large enough to overlap the line of incision at least two inches in every direction, thoroughly soaked in carbolic oil (one part in five of oil), was applied and carefully adjusted, so as to rest evenly on the irregular surface. Over this again a somewhat larger piece of lint, similarly prepared, was placed; and then upon this two thicknesses of gutta-percha tissue. Cotton wadding and a bandage completed the dressing.

It is unnecessary to give a daily report of the progress. It is sufficient to mention that each day the patient improved in condition and in comfort, and after the fourth day, was able to swallow with comparative ease; the pulse gradually declined in frequency, and the expression became one of comfort and thankfulness.

The local treatment consisted in maintaining, as far as practicable, absolute rest; but this was a matter of difficulty, for, owing to the encroachment of the tumour on the pharynx, the patient was harassed, as before the operation, with constant cough and desire to expectorate. Each day the dressings, *except the under-fold of the lint*, were carefully removed. This under-fold was well smeared over with carbolic oil, and care taken to let a little of the oil get beneath its margins all round; and then fresh lint soaked in the oil was put upon it; gutta-percha, cotton-wool, and a bandage as before. Such was the daily routine. No serum, pus, or discharge of any kind escaped. On the seventh day I ventured to remove the under-fold of carbolic lint, taking care to let a quantity of carbolic oil run under it as I lifted it up. The entire line of incision appeared to have united by primary union; there was not one drop of discharge. In fact, it looked exactly as I had left it when first covered up. Under cover of the oil, I then removed all the sutures; and probably I might then have dispensed with any further dressing to the part, but I wished to be quite secure, and feared, if I did so, that the points of suture might inflame, and suppuration spread thence to the deeper parts of the recently healed wound. I therefore decided to reapply the carbolic dressing, as before, for a few days longer. Five days afterwards, I again removed the under-lint, and found every part so perfectly sound and firm that no further precaution was required. There was no swelling and no thickening of tissues; nothing, indeed, except a simple linear cicatrix, such as must have occurred had the incision merely extended through the skin.

The consolidation and absorption of the aneurismal tumour progressed *most satisfactorily*. At the end of three weeks the patient was allowed to leave his bed. The sight of the right eye greatly improved, although the squint remained. He left the hospital on the 13th of April, cured.—*Lancet, May* 29, 1869, *p.* 743.

43.—ANTISEPTIC SURGERY.

By Thomas Keith, Esq., Edinburgh.

[The following was elicited in consequence of some incidental remarks of Dr. Morton and Dr. Campbell Black (of Glasgow) seeming to lead to the inference that Mr. Keith had no faith in the antiseptic treatment of wounds.]

From my first operation of ovariotomy in 1862, to my ninety-second one a fortnight ago, I have, more or less perfectly, used some antiseptic dressing. At first, bags of charcoal, sulphite of soda, sulphate of iron, or Condy's fluid were employed. In my twelfth case I began the use of the tar-bags. This admirable dressing I received from Mr. Wells, to whom I shall ever be indebted for much practical information, which has tended more than anything else to keep down my death-rate, and helped me to avoid the rocks on which I might otherwise have split. For nearly three years, along with Mr. Wells's dressing, I have in every case very freely used carbolic oil or the watery solution, both during the operation and in the after-treatment.

In the cure of other wounds, I now invariably follow Mr. Lister's method. Twice during the past month I have had occasion to operate for cancerous disease of the breast. In both cases the larger vessels were twisted, and numerous small oozing points were secured by carbolised catgut ligatures. Both wounds were dressed antiseptically, exactly as I have seen Mr. Lister do. In neither case was there a single drop of pus from first to last, and the patients were convalescent in a few days. I have also employed the catgut ligature on two occasions of very extensive adhesions of the omentum in ovariotomy, and also for sutures in closing the abdominal wound. I think I am only now beginning to realise what Mr. Lister's antiseptic method and his carbolised animal ligatures are yet to do for surgery.—*Lancet, Sep.* 25, 1869, *p.* 454.

44.—A CASE OF EXTREME CONSERVATIVE SURGERY.—A THUMB SAVED.

By Dr. V. Stone, Laurencekirk, N. B.

Three months ago, J. W., aged 15, was brought to me with his right thumb said to be trapped off. On examination, I found the thumb cut, or rather crushed through, at the metacarpo-phalangeal joint, and hanging quite loose, a piece of integument half an inch broad alone keeping it from being completely separated from the hand. The injury had been caused by the boy, who was unharnessing a horse and cart, letting the whole weight of the cart fall down upon his thumb, which was between an iron bar and chain.

Of course, the first thing thought of, and probably, according to all rule, the proper thing to do, was to amputate; but I was deterred from this by two things—viz., the boy's distance from home, and the fact of not having suitable instruments by me (it was in the country). I proceeded to remove some loose small particles of bones, and clean the wound; then, having placed the bones in proper position, and replaced the skin, I secured the latter by three stitches of stout silver wire through the palmar side, and applied a water dressing with a light bandage to keep all secure. I thought of amputating the thumb next morning, and proceeded to the patient's home prepared for doing so, but on removing the dressings, I was so much struck with the appearance of the wound (which looked remarkably well, considering the injury), that, on the boy telling me that he had little or no pain, I made up my mind to delay for a little time, and see how things would go on. I again applied water dressing, with the addition of a little Condy, and ordered it to be changed twice a day, taking care that the parts should be kept in good position. Two days afterwards, the wound still looking healthy, I continued the Condy dressing, watching carefully for indications of anything going wrong; however, nothing appeared, and with the exception of a slight oozing at the lowest point of the wound, which I had left open to allow anything to drain off, it promised to heal quickly. At the end of a week I applied a thin pasteboard splint to the back of the thumb, over the sound piece of skin, to keep the bone from being disturbed. The Condy was still being applied. In another week—that is, about a fortnight after the accident—the wound was quite healed. I then very slightly flexed the thumb, so that it might be in as useful a position as possible, and so bound it up that it was protected from movement or injury till the bone was firmly united.

At the end of a month one would have seen very little the matter with the thumb, as far as appearance went, and in two months' time the boy had a very useful hand, and the thumb, though still stiff at the metacarpo-phalangeal joint, capable of a considerable amount of motion (for, from practice, the mobility of the other joints seemed to increase), and a very valuable opponent to the fingers.

I saw the boy the other day, and he does all his work (that of a farm servant) with comfort, holding the plough, and grasping anything quite well. If this lad had lost his thumb, he would have been incapacitated from many kinds of work which he now manages with ease.

This case is, I think, a warning how careful we ought be in coming to a conclusion when there is a question of amputation of the thumb or fingers; for I have no hesitation in saying that, in nine cases out of ten, a thumb or finger is removed for an injury like the one described—it seems almost done already, only a little finishing off required—but give nature a fair chance and a little assistance, and the result is sometimes astonishing. Again, the question of amputation in the case of an injury of this description to a thumb or finger is removed from all comparison with that in a case of a similar injury on a larger scale—*e.g.*, that is, at the wrist or ankle—for in the former case the risk of constitutional effects is comparatively trifling, whereas in the latter, it is a very important element in the consideration of the question. A word, before I finish, as to the dressing. I attribute the absence of gangrene or a serious amount of suppuration entirely to the Condy's fluid used, which I think quite as good as carbolic acid and much more pleasant, the smell of the latter being almost insufferable to some patients. The action of both is about the same, and I see no reason for preferring the acid.—*Med. Times and Gaz., Aug.* 14, 1869, *p.* 189.

45.—CASE OF SPINA BIFIDA SUCCESSFULLY TREATED BY LIGATURE.

By Dr. Edward Sidebottom, Mottram-in-Longdendale, Cheshire.

I was summoned on the 8th September, 1866, to attend Mrs. D., of Hollingworth, in her third confinement, who, after a long and tedious labour, was delivered of a fine full-grown male child, about the usual size and weight, apparently healthy and strong. I soon discovered that the infant was suffering from bifid spine in the lumbar region, the tumour being about the size of an orange, tense, fluctuating, and of a pale-purple colour.

I made known to the parents the danger attending such cases, and suggested that I might have resort to some operation for the removal of the tumour, or try ligature. I came to the conclusion to adopt the latter course; and in two days after its birth I placed a ligature of silk thread round the neck of the tumour, tightening the ligature only slightly. The following day I passed another (also of silk thread), without removing the first. This appeared to produce a good deal of irritation, causing several clonic convulsive attacks for several hours during the day, but which passed off in the evening. The next day I passed a third ligature (silk thread), not disturbing the two former ones, and using more constriction,—still without causing more convulsions, *but leaving the child fretful.* The three ligatures were all kept on until the tumour sloughed off, which did not happen for three weeks, leaving only a very small wound, over which I applied a piece of dry lint, using gentle pressure. In three days the wound had perfectly healed, leaving the child's lower extremities partially paralysed. After a few days cold water was applied by means of a sponge along the whole course of the spine, daily, with marked benefit, the paralysis disappearing by the end of three months.

The reason I have not reported this case sooner is simply that I might watch my little patient for some time to see if any new symptoms would develop themselves; but now that three years have elapsed I consider him out of danger. The little fellow is strong and healthy, and can run about as well as any boy of his age. In the course of my obstetric practice I have had many cases of spina bifida, in some of which I have used the remedies generally recommended, such as support by trusses and bandages, and puncturing the tumour. Others I have left to nature, some of which lived a few months and one five years. But I must confess that for many years I have had the idea that ligaturing the tumour in certain cases might be of service. I have often mentioned it to many of my medical friends, from whom, however, I have met with but poor encouragement. But the nearly always unfavourable result of repeated puncturing, pressure, &c., and in this case the child being well nourished and strong, led me to adopt this plan of treatment, which, I am happy to say, has proved a perfect success. Foresters in the first instance, and Benj. Bell more recently, advised the application of ligatures round the base of the sac, provided the disease be local, and a mere distension by fluid in consequence of the imperforation of the bones, and not a disease of the spinal marrow or membranes, and it be not complicated. It does not appear that either of them tried it. Erichsen (vol. ii. p. 215) says he has "never known any but a fatal result follow the removal of these tumours by ligatures, scissors, or knife." Gross (vol. ii. p. 188) speaks equally discouragingly of the results, and I cannot find a case on record which has been treated successfully by this method. Dr. Nevins mentioned, at the Liverpool Pathological Society, in 1850, three cases in which puncture had been tried. One case was cured, the gentleman being then forty years of age; the second died; and the third was quite well at the end of three or four months, with the sac contracted. Dr. Hana has related a case in which spontaneous rupture of the sac took place after measles, and the child recovered. Cases have been cured by puncture followed by injection of iodine, as proposed by Dr. Brainerd. The present case was doubtless one in which the spinal cord had no, or only slight, connexion with the sac. Ollivier states that when the disease is not complicated with hydrocephalus, he has generally found the spinal marrow traversing the sac unaltered; but if coexistent with hydrocephalus, or if the canal of the spinal marrow be distended with fluid, the cord may be flattened out, as it were, so as to apparently line the sac. The gradual compression by the tightening of the ligatures may have contributed a little to the favourable result in this case, and should another opportunity present itself to me, I shall not hesitate to adopt the same course.—*Lancet*, *Sept.* 25, 1869, *p.* 433.

46.—ON THE TREATMENT OF CARIES OF THE SPINE

By Bernard E. Brodhurst, Esq., Lecturer on Orthopædic Surgery at St. George's Hospital.

The *treatment* of disease of the spine does not differ materially from that which is indicated for scrofulous joints generally—namely, rest of the part affected.

A limb may be kept at rest by means of a suitable splint, and when the joint is thus secured, the patient can move about without fear of injury, so long as the limb is not used. It is not so, however, with the spine. Only the posterior surface of the spine can be efficiently supported, and, therefore, the trunk cannot be perfectly fixed, and friction of the opposed surfaces of the carious bodies of the vertebræ prevented, except in the recumbent posture. This is the *position, then, which* should be constantly observed in disease of the spine. But this is not alone sufficient, for it is required to keep the trunk motionless, so that friction of the diseased surfaces shall be avoided. This can only be effected by means of a well-adapted splint, which shall grasp the pelvis and shoulders, and if necessary the neck and occiput. As a further precaution, the mattress on which the patient lies may be slightly hollowed to receive the splint. The most convenient couch for this purpose is a double inclined plane, by means of which the shoulders and knees may be gently raised or lowered at pleasure. Such movements add greatly to the comfort of the patient.

The supine position is preferable to the prone position, for it can be continued longer without movement, and is, therefore, more favourable to anchylosis. But whatever the posture may be, absolute rest in the recumbent position is an undoubted necessity. Professor Pirrie has put this point well. He says: "Rest of the diseased parts and the recumbent position, whether the body be prone or supine, are of the utmost importance from the very commencement of the disease, until a cure is effected by anchylosis."

The importance of this fact—rest in the recumbent position—cannot be too much insisted on. Without it, all other treatment is useless; but with it, I have never known an abscess to form. The time which is required for this absolute rest depends on the duration of disease; probably eight or ten months may be sufficient at an early period; but the necessary time will increase in proportion as disease has advanced. Without rest in the recumbent position, anchylosis can never take place.

Anchylosis, then, is the cure to be effected. And when this has taken place, a portable instrument may be worn to support the spine and remove the weight of the head and shoulders. Now that the upright position is again assumed, two incurvations of the spine will be observed—one above and the other below the seat of disease. These are essential for the equilibrium of the body; and they can only be formed after anchylosis has taken place. Thus these curves become proofs that anchylosis is more or less complete.

There is a spurious as well as a true anchylosis, however; and this consists of ossific union in the course of the posterior surface of the spine, which leaves the spaces of the bodies gaping. This form of union is prompted by the prone couch; it is slender, and liable at any moment to yield.

When unfortunately, and as the result of motion and increased irritation, pus accumulates in such quantities that an abscess shows itself externally, whether in the groin, the loin, or elsewhere, it should never be allowed to break; but it should be opened when evacuation of the contents becomes absolutely necessary, through a small valvular opening. And thus tension may be removed by the withdrawal of a small quantity of matter, when the opening may be again closed. This operation may be repeated as it becomes necessary. Again, the contents of the sac may be evacuated, and a solution of carbolic acid may be injected. I prefer the latter mode of treatment; for the pus is then removed instead of being absorbed, and necessarily less danger attaches to such a course. Without motion, as has already been said, the abscess would not have formed. If motion be allowed after the contents of the abscess have been evacuated, it will again fill. Therefore, whether before the formation of the abscess or after its evacuation, the rule for our guidance in these cases is one and indispensable—rest in the recumbent position.—*Lancet, July* 31, 1869, *p.* 154.

47.—A METHOD OF MAKING THE INTERRUPTED SUTURE BY MEANS OF FINE SEWING NEEDLES.

By Dr. J. Lamprey, Surgeon 67th Regt.

Incised wounds, especially of the face and head, frequently claim the attention of the military surgeon, as soldiers, who are not less inclined to be pugnacious than civilians when intoxicated, very often, in their drunken brawls, receive wounds of so formidable a character that it is necessary to resort to sutures to keep the edges of the wounds in position. The kind of suture

I hitherto had recourse to was made with the ordinary suture needle and silk thread, and this is perhaps still generally used by surgeons, notwithstanding the investigations of Sir J. Y. Simpson, who has pointed out the advantages of metallic wire over silk, or other organic materials for such a purpose.

It struck me that the ordinary suture needle, which is also required in using fine metallic wire, and a very formidable weapon in its way, capable of making a considerable wound and giving rise to severe pain, might be dispensed with by using the finest sewing needles, and making them serve the same purpose as the wire or thread, in the manner suggested by the twisted suture, but with this difference, that instead of inserting the needles at the distance of half an inch or so from the edges of the wound, if I inserted them quite close to the margin of the edges and passed them through the cutis alone, without touching the deeper tissues, I could keep the edges of the wound in close coaptation sufficiently long to allow of immediate union taking place.

Accordingly, on the first occurrence of a case of incised wound, I inserted a fine needle, of the kind used in sewing cambric, through the margins of both edges of the wound, and bringing them together, I secured them in that position by passing a single noose of ligature silk from one extremity of the needle to the other, and taking care to avoid unnecessary pressure or constriction. At a distance of about three-eighths of an inch I inserted a second needle, in a similar manner, and noosed it also, and again a third needle, and so on throughout the whole extent of the wound. I then removed by means of the cutting pliers both ends of the needles, merely allowing an eighth of an inch of the needle to project above and below the wound.

Before inserting the needles, I applied a solution of carbolic acid diluted to 1-40 to the open wound, and when they were inserted I applied lint wet in the same solution, and covered all with a piece of gutta-percha tissue. On the following day I removed the external dressing and withdrew the needles carefully, so as not to disturb the noose of silk thread which acted as a support to the recent agglutinating lymph holding the edges of the wound together. I allowed all to be exposed to the air by applying no further dressing, and in a few days, the nooses of silk thread being quite superficial, fell off, leaving the smallest trace of a cicatrix behind. No discharge of pus or ulceration followed this proceeding. I have recently had some extensive cutaneous wounds, one of them a large scalp wound, treated in this way, and the results were so satisfactory, that I have no hesitation in treating all similar wounds in the same manner.

The advantages of this mode of treatment appear to be as follows:—

1. The fine needles make the smallest possible wound.
2. They are inserted and remain so, thus causing a minimum of pain.
3. Their presence causes no irritation, consequently there is no secretion of pus or ulceration.
4. They are much more easily and expeditiously applied than other modes of making suture.

I prefer moving the needles on the following day, though if necessary they could be retained longer, but once immediate union is established they are no longer required, and should be removed at once.. This removal is much facilitated by using only the pointed extremities of the needles, owing to their taper form, and with this view I now only allow so much of the needle to project on the opposite side of the wound as will permit of the easy application of the noozing thread. I have also observed that the longer the needle remains in the wound the facility of removing it becomes less, as the oxidization of the needle increases its size, and roughens it. Still a little rotatory movement will enable it to be extracted by the forceps quite easily.

Having seen so much benefit derived from the use of carbolic acid, I apply it in all cases to such wounds in the manner stated, as I consider it not only has valuable antiseptic properties, but also prevents the formation of pus; and as it could not be applied to wounds kept together by adhesive plaster, these sutures are necessary.

From what I have observed in this mode of applying sutures to wounds of a superficial character, I should have no hesitation in adopting the same method of bringing together the flaps in cases of amputation, using, if necessary, a stronger needle, and inserting it a little further from the margin, and using fine iron wire in lieu of ligature silk.—*Medical Press and Circular, May* 19, 1869, *p*. 412.

48.—ON A NEW METHOD OF USING NEEDLES IN THE OPERATION FOR HARELIP.

By Lawson Tait, Esq., Wakefield.

I venture to bring before the notice of practical surgeons an improvement in this operation, which I believe to be one of importance. It is an operation which is performed principally for æsthetic reasons, and it is frequently marred in this respect by the ungainly scars which are left by the needles when used in the ordinary way; in fact, I have not yet seen a case in which this defect has not been marked. What I propose is, that instead of two or more needles being introduced transversely through the flaps, they should be used in this manner: Having made what incisions he deems requisite for the operation (and I may here say that I have abandoned all the fancy manipulations for the old-fashioned straight incisions, removing plenty of tissue), the surgeon is to introduce two ordinary seampstress's needles, armed with a few inches of silver wire doubled, through the flaps, in the form of a St. Andrew's cross; the point of each needle is to be introduced through the mucous membrane of the lip, about half an inch from the edge of the flap, and brought out at the middle of the incision, then introduced into the other flap at the point opposite, and brought out at the root of the ala of the nose. The needles cross in the middle of the wound. The flaps are to be carefully adjusted, then the heads of the needles to be pushed fairly into the lip, and pulled together by twisting the wires; the points of the needles are then to be cut off close to the skin, and the stumps retracted into the flaps. In this way nothing is left to "catch," and when the needles are removed, by untwisting the wires and pulling by them, there are no scars left.

In the last case in which I used this method, the parents of the child, aged seven years, say that it is scarcely possible for a stranger to tell that the child has been operated upon, and in this case there was a complete and very wide intermaxillary cleft, which I had previously closed.—*Lancet, Sept.* 25, 1869, *p*. 435.

49.—SUTURE PIN CONDUCTOR, A NEW INSTRUMENT TO FACILITATE THE INSERTION OF PIN SUTURES.

By Dr. Gurdon Buck, Surgeon to the New York Hospital.

In operations upon the lips and face in which exact adjustment of the edges of the wound is especially important, so that the least conspicuous scar may follow, the figure-of-eight pin suture is, in the judgment of the author, preferable to any other suture. To facilitate the introduction of the pin, the instrument herewith described has been devised, and has proved so satisfactory in use that it is believed a good service will be rendered to practical surgery by making it known to the profession.

The instrument consists of a needle, of the slightness of an ordinary knitting needle, fixed on a handle and slightly curved. It grows a little larger round for half an inch near its point. Its extremity is bevelled off to a sharp point on its concave side, and perforated lengthwise on its bevelled face like the stem of a hypodermic syringe, such as is in common use. The mode of using it is as follows: The edges of the wound intended to be brought into coaptation, having been traversed by the conductor, guided by one hand, a pin held between the thumb and fingers of the other hand is engaged by its point in the perforated hole at the end of the conductor, and held steadily in place while *the conductor is withdrawn* and the pin made to follow it, which it does with unerring certainty. A soft iron or silver wire may be inserted in the same manner as the pin when it is intended to employ a wire suture.

The instrument is manufactured and kept for sale by Messrs. Geo. Tiemann & Co., No. 67 Chatham Street.—*Medical Record, July* 1, 1869, *p.* 211.

50.—ON THE USE OF CARBOLISED CATGUT LIGATURES.

By JAMES SPENCE, Esq., President of the Royal College of Surgeons, of Edinburgh, Professor of Surgery in the University of Edinburgh.

[The following case shows the use of the carbolised catgut ligature to be by no means free from danger.]

Having occasion, on Wednesday, 12th April, to tie the right common carotid artery, I determined to use the carbolised catgut ligature so strongly recommended by Professor Lister, of Glasgow. To give the method a fair trial, I had some catgut prepared for the purpose; but not being satisfied with it, I obtained a carbolised catgut ligature from Prof. Syme's department of the hospital, as I knew it had been used there in cases of amputation, and was prepared according to Prof. Lister's plan. The ligature was a fine one, firm and even in structure; and before using it, it was dipped into the ordinary weak carbolic solution to render it pliable.

I exposed the artery very carefully below the omo-hyoid, and passed the ligature round the vessel with the least possible disturbance of its connexions. I was most particular in tying the artery. I tightened the first noose of the reef-knot firmly with the points of my forefingers, and withdrew them along the ends of the ligature so as to keep it firm; and still further to prevent all risk of the first noose slipping, I requested Mr. Annandale, who was assisting, to fix the knot by pressing on it with the handle of the needle, whilst I cast the second noose of the reef-knot and tied it. As I was to cut the ends of the ligature close to the knot, I took the further precaution of protecting the ends of the reef-knot by tying a third knot, close to which I cut off the ends of the ligature. The wound was then washed with carbolic-acid solution, accurately closed by points of suture, and a slip of lint soaked in carbolic oil was laid over it and fixed with strips of plaster. So specially particular was I in regard to the operation that I did not even use the hospital sponges, but new sponges thoroughly steeped and washed in dilute hydrochloric acid, then in water, and lastly in a weak solution of carbolic acid. I mention these things to show that every possible precaution was used to give the method a fair trial.

The patient was very comfortable during the afternoon and evening succeeding the operation, and passed a good night, with the exception of sickness from the chloroform when he took liquids. On Thursday morning, at half-past ten, I received a message to say that he had suddenly become comatose and paralysed on the left side. On my arrival at the hospital I found the patient quite unconscious, and his left arm and lower extremity paralysed. My resident surgeon, Mr. Bramwell, informed me that about nine o'clock the patient asked the nurse for a draught of milk, after taking which he vomited; and during the vomiting the nurse observed him move his limbs violently, and he then became insensible and palsied, as before mentioned. Sinapisms to the spine and cold to the head were applied, but remedies produced little or no effect, except that the lower limb somewhat recovered its power of motion, not sensation. My opinion, from the symptoms present, and the mode of their invasion, was, that some diseased vessel at the base, or in the substance, of the brain had given way, causing compression or breaking up of the brain-substance on the right side, as this was likely enough to occur when, owing to the interruption to the circulation through the carotid, the blood would be thrown with increased force on the collateral branches.

The patient died on the morning of the 15th of May; and as I was anxious to secure the parts operated on before decomposition occurred, I had the wound in the neck enlarged, and removed them some hours after death.

On examining the carotid artery, I was not a little surprised to find that it *did not seem in the slightest* degree constricted at the point of deligation; in fact, at first I saw nothing which I could recognise as the ligature. On careful examination, however, I found that what at first seemed some lymph or tissue, was the catgut softened. The circle of the ligature had given way apparently on the side of the vessel nearest the trachea, the entire knot being connected with the end of the ligature which was visible. On looking at the ligature with a pocket lens, the texture of the catgut was distinctly seen, but it was so gelatinous and pulpy that it seemed as if it were cast in gelatine, and a portion removed for microscopic examination, when placed between two slips of glass, spread out like a fluid. The head was subsequently opened, and the brain examined, when an embolic clot was found plugging the middle cerebral artery.

Reviewing the case under the light thrown on it by the post-mortem examination, I think there can be little room for doubt that the softened and altered catgut ligature had yielded during the vomiting, and that the blood-current in the carotid had forced the recent clot at the point of ligature into the cerebral arteries, causing embolism, and the fatal result.

I have had some experience in tying arteries in the human subject, and I at one time conducted a very extensive series of experiments on the effects of ligature of arteries on the lower animals; but I never saw a case in which the ordinary ligature of silk or linen thread yielded or slipped, and never knew of a case in which the constricting circle gave way as in this case. Under these circumstances, whilst I believe carbolised silk or linen thread may be perfectly safe, I cannot avoid the conclusion that catgut, however prepared, is liable to become altered, softened, and disintegrated by the heat and moisture of the living tissues around it, and thus allow the deligated vessel to become again permeable. I learn also that in a case of amputation of the thigh in which the femoral artery had been tied with catgut, hemorrhage occurred from the ligature slipping off.—*Lancet, June* 5, 1869, *p.* 772.

51.—THE CARBOLISED CATGUT LIGATURE.

By Dr. Edward Lawrie, Resident Surgeon, Mr. Syme's wards, Royal Infirmary, Edinburgh.

The failure of the catgut ligature in Professor Spence's case of ligature of the common carotid artery may have given rise to doubt in the minds of some members of the profession as to the expediency of using the antiseptic catgut ligature in the manner recommended by Professor Lister for the deligation of large arterial trunks. As I am specially concerned in Mr. Spence's case, from his having used a ligature prepared by me, I hope you will allow me space for a few remarks, which may throw some light on so important a subject.

I wish, in the first place, to make some remarks with regard to the ligature itself; and, secondly, to notice the means used to prevent putrefactive suppuration in the wound afterwards.

Since Mr. Lister discovered the antiseptic catgut ligature, it has been constantly used in Mr. Syme's wards in amputations, &c., though, as yet, there has been no opportunity of using it for vessels in their continuity. On the 12th of May, the day of Mr. Spence's operation, one of his dressers came to me in a great hurry a few minutes before the operation was to be performed, to ask if we had any "carbolised ligatures," either silk or catgut. I gave him some of both kinds that had been prepared for our own use three days previously, but which had by that time got perfectly dry, and had probably parted with most of the carbolic acid they had imbibed. I was not aware, I confess, at that time, of the importance of the directions which Professor Lister has given, that the gut should be kept steeping for a protracted period in the antiseptic solution. Though Mr. Spence describes very carefully the way in which he made the knots in tying the vessel, it is quite possible, considering the state of the catgut at the time of the operation, that the first knot yielded while the second was being tied; and the unusual precautions which he adopted to guard against this occurrence imply that he felt apprehensive of it. This view is borne out by what was seen by myself and others in the dissected preparation, where after the knots had been unfortunately completely cut away, more catgut was visible on the vessel than could possibly have formed the constricting ring if the first knot had retained its hold.

As to the precautions taken to prevent subsequent putrefaction in the wound, I can only say that, whatever the sponges were washed with before the operation, they were frequently wrung out of water without carbolic acid during its performance; that no means were taken to render the instruments, or the fingers of the operator or his assistants, innocuous; and that the dressing of the wound consisted of a single strip of lint moistened in a solution of oil and carbolic acid (one part in twenty), not large enough to overlap the wound half an inch in any direction. These are the precautions which Professor Spence took "to give the method a fair trial;" and they have only to be compared with the directions of Professor Lister, or the way in which Mr. Bickersteth's operation on the common carotid artery was conducted, to show that they were entirely insufficient to prevent putrefaction. Accordingly, putrefactive suppuration did actually occur, as was proved by the appearance of the wound immediately after death. I happened to be the first to examine it, and found its deeper surfaces coated with yellow pus, and offensive from decomposition. Under such circumstances it is not surprising that the catgut was then soft, and even diffluent; but it by no means follows that it was so at the time when the cerebral symptoms supervened, which was within twenty-four hours after the operation: indeed, it appears inconceivable that such can have been the case.

Lastly, I cannot but regard it as strange that the artery was never laid open to ascertain whether the coagula had really been displaced. That this was so is, so far as I am aware, merely a matter of hypothesis.

From the above facts your readers will probably be of opinion that, while there is no sufficient evidence that the patient's death was really caused by the operation, the manner in which the method was carried out sufficiently explains the failure.—*Lancet, June* 19, 1869, *p.* 864.

52.—THE CARBOLISED CATGUT LIGATURE.

By E. R. Bickersteth, Esq., Liverpool.

The remarks made by Mr. Spence in the Lancet of the 5th instant, on the failure of the carbolised catgut ligature in his case of deligation of the carotid artery, are without doubt calculated seriously to prejudice the minds of all operating surgeons against its use, by causing distrust in its safety. With the hope of preventing this, and of restoring confidence in the employment of what I believe to be a most valuable addition to the surgical *armamentarium*, I venture to make the following brief remarks upon my own cases, upon Mr. Spence's case, and upon the results of an experiment with the catgut which I have recently performed.

As I have already detailed in your columns (the Lancet, May 29th and June 12th), I have tied the common carotid and external iliac arteries for aneurism with the catgut ligature with the most signal success; the entire wound in the former case healing at once, and in the latter all except the superficial portion uniting in a similar manner. I have also employed the catgut in three cases of amputation, tying with it the femoral artery twice, and the popliteal once. The ends of the catgut were cut off, torsion was applied to the other vessels, and, the flaps being brought together, the wounds healed readily. In no case was there any subsequent hemorrhage, showing that the ligatures must have held fast.

And now, with regard to Mr. Spence's unfortunate case, we find, from his own account, that the next morning, or within twenty-four hours of the operation, the patient, while in the act of vomiting, became suddenly comatose and paralysed on the right side. This condition continued till his death on the morning of the 15th, *less than three complete days after the operation. On post-mortem examination, the carotid* was found not to be constricted at the *point of ligature; and the catgut,* or what remained of it, was so softened and pulpy "that it seemed as if it was cast in gelatine, and a portion removed for microscopic examination, when placed between two slips of glass, spread out like a fluid." An embolic clot was found plugging up the middle cerebral artery; and the inference drawn was that the catgut ligature had given way at the time that the patient vomited, and that the current of blood having again found its way through the artery, had swept away the soft, newly formed clot, a portion of which, entering the middle cerebral, had caused the fatal issue. In your number of June 19th, a letter appeared from Mr. Lawrie, Mr. Syme's house-surgeon, and from that gentleman's account, it appears that Mr. Spence, in spite of his statement that everything at the operation was conducted *secundum artem*, and in strict accordance with Mr. Lister's principles, does not in reality seem to have followed out those principles at all; and I am convinced that it is only by scrupulous adherence to the smallest minutiæ that success is to be obtained. Furthermore, Mr. Spence's view as to the cause of the embolism, though not improbable, is still not absolutely a certain one, since Mr. Lawrie distinctly states that the carotid artery was never opened, so as to see in what condition the clot at the point of ligature really was.

Apart, however, from these considerations, I was so struck with the extreme improbability of a proper piece of carbolised catgut becoming in three days little more than a diffluent jelly, that, before Mr. Lawrie's letter appeared, I performed the following simple experiment, with a view of discovering what actually does occur to a piece of catgut imbedded in living tissues for a certain period: A patient in my wards being about to have his foot removed for disease of the ankle-joint, I, with his consent, pinched up the skin on the dorsum of the foot, and passed a needle, armed with a double carbolised catgut ligature, through the living tissues, cutting both ends of it close off. The skin, being released, resumed its natural position, leaving the two pieces of catgut buried in the textures on the dorsum. The needle punctures healed at once, and no inconvenience whatever was caused to the patient by the presence of the ligatures. This was done at two p.m. on the 5th inst., the gut used being what is known as the finest violin string, and having been prepared a month before. The foot was removed at two p.m. on the 8th, and was at once carefully examined by Mr. Banks, the pathologist to the hospital, who has given me the following report:—

"On the 8th of June, I examined the foot of A. B., a patient in Mr. Bickersteth's wards, which had been amputated about a quarter of an hour previously. Two small black points were visible on each side of the dorsum of the foot which indicated the punctures by which the needles had entered the skin. They were quite healed. The two pieces of the double catgut ligature which had been inserted by Mr. Bickersteth seventy-two hours previously were laid bare by dissecting down upon them at one end, and then slitting up the track in which they lay. They lay side by side, running principally through the substance of the extensor brevis digitorum muscle. On lifting them out, they were found to adhere slightly to the muscular fibres through which they passed, and the now empty tract was seen to be coated with a whitish film. This was scraped off at one part, and the material so collected was examined with $\frac{1}{4}$ and $\frac{1}{8}$ Powell and Lealand's glasses. A great many blood-corpuscles were visible—derived, no doubt, from blood unavoidably pressed out from the muscular fibres, as the foot was still quivering when examined. In addition to innumerable indefinite granules, molecules, and nuclear bodies, there were present a large number of granular multinucleated cells, the majority being about the size of white blood-cells, many of them larger, and a few smaller. The edges of many of them were rough and crenated. On the addition of acetic acid the cell envelope was rendered almost invisible, and the granular nuclei in the interior became sharp and well defined. In short, the microscopic appearances were just such as would be presented by organisable lymph. The pieces of catgut themselves were swollen about a fourth larger than when inserted. All the twists in them were quite as well marked as ever. They sustained a weight of about three pounds each, and would have borne more, only, as they were not more than two inches long, a string had to be fastened to one end by which to attach the weight. As the weight increased, this at last came off, stripping down the outer softened part of the gut, but leaving the inner and harder portion as a thick thread; this showed the tenacity of the ligature. Pieces of the catgut were examined with the microscope, but simply showed a dim, semi-transparent, homogeneous structure, streaked longitudinally."

From this it appears that properly prepared catgut, after remaining imbedded in the living tissues for seventy-two hours, so far from becoming pulpy and incapable of resisting the impulse of an excited circulation, is equal to bearing a strain of upwards of three pounds. When improperly prepared —when allowed to become "perfectly dry," and remain so till "within a few minutes" of being doubly and trebly knotted with the tightness necessary to close an artery the size of the common carotid,—it is not impossible that the gut may have broken or become cracked. It could hardly, however, have been anticipated that catgut of any kind should have so completely degenerated in the "course of three days," even when, as in Mr. Spence's case, the antiseptic treatment was subsequently so imperfectly adopted that the deeper surfaces of the wound were afterwards found coated "with yellow pus, and offensive from decomposition."—*Lancet*, *July* 24, 1869, *p.* 142.

ORGANS OF CIRCULATION.

53.—TRAUMATIC VARICOSE FEMORAL ANEURISM SUCCESSFULLY TREATED BY LIGATURE.

By JAMES SPENCE, Esq., Surgeon to the Queen in Scotland, President of the Royal College of Surgeons of Edinburgh, Professor of Surgery in the University of Edinburgh.

The following case appears to me to be worthy of publication, as I can find no mention of any instance of traumatic varicose femoral aneurism which has been treated on the same principles, whilst the method of treatment generally recommended, and which has been hitherto almost invariably adopted in such aneurisms at the bend of the arm, seems to me to be inapplicable, or at least attended with grave risks in the case of the femoral.

[The patient was a lad 15 years of age, who had been wounded by a stab with a knife in the upper part of the thigh. There was great loss of blood, but the wound healed nicely. Nearly three weeks afterwards he was walking hurriedly, when he felt a "beating" in the part, but no pain, and on examination a pulsating tumour was found, which was diagnosed by Mr. Miller, of Edinburgh, as a false aneurism.]

I found the patient a lad of slender form, and tall for his age, of delicate appearance, and somewhat anæmic. On examining the right thigh, I observed a cicatrix as of a recent punctured wound, situated on the outer border of the sartorious muscle, five inches and eight lines below the middle of Poupart's ligament. Extending from the puncture there was a pulsating swelling, not very prominent, somewhat flattened, of an elongated oval form, two and a half inches long by one and three-quarter inches broad. About two inches of the swelling were on the proximal side of the wound, *i.e.*, towards Poupart's ligament, and about half an inch on the distal side. Besides this distinct pulsating tumour there was also an undefined fulness on the inside of the thigh, close up to Poupart's ligament, caused by the dilated femoral vein, and the upper part of internal saphena was also dilated. The aneurismal swelling at the wound was seen to pulsate, and the pulsation was very strong when the hand was placed on the tumour, and accompanied by a most peculiar thrill, almost startling, when first felt. On using the stethoscope, besides the "blowing" sound, there was also heard a loud buzzing or whizzing bruit, which has been not inaptly compared to the noise made by a "blue-bottle fly confined in a paper bag." This latter sound was so loud as to be heard even at a little distance, and without the stethoscope. The thrill and whizzing murmur extended upwards from the wound both in the aneurismal tumour, and also in the dilated femoral vein, as high nearly as Poupart's ligament, but they were much less distinct in the lower part of the aneurism—only barely appreciable. The pulsations of the anterior and posterior tibial arteries seemed rather weaker than in the sound leg. The patient felt the limb somewhat cold, but the thermometer showed no difference in the actual temperature.

I directed that he should be kept perfectly quiet in bed, with the thigh flexed on the pelvis, and that graduated compression should be maintained upon the common femoral artery, at the brim of the pubes, where it emerges from the abdomen, by Carte's compressor, modified so that the pressure was made by means of a leaden weight instead of the full screw action. He was ordered to have a nutrient, non-stimulating diet, consisting of milk, with white of eggs, and farinaceous and a little animal food. Under this treatment the pulsations and bulk of the aneurism diminished, but I found that the compression, though as far as possible limited to the artery, interfered with the venous circulation, and gave rise to so much pain and swelling in the thigh, and irritation of the inguinal glands, that it was obliged to be abandoned. Ice was then applied over the swelling and to the groin, and was beneficial in allaying the irritation resulting from the compression, but it had little effect on the aneurism; and I therefore determined to operate as soon as the local irritation was subdued.

I had from the first contemplated the probability of an operation being required, and had carefully weighed in my mind what method of procedure I should adopt, and had decided, for reasons which I shall explain hereafter, to tie the superficial femoral above and below the aneurism without opening the sac. Accordingly, on the 8th of April, 1868, assisted by Drs. Dunsmure, Gillespie, Littlejohn, Taylor, and Mr. Miller, I proceeded to perform the operation I had planned. The patient being put under the influence of chloroform, I made an incision 7½ inches long, commencing about 2 inches below the middle of Poupart's ligament, and continued downwards in the course of the femoral artery. This incision passed over the long axis of the aneurism, and crossed the course of the sartorius muscle, so that I might reach the artery under the inner border of that muscle at the upper part, and under its outer margin at the lower part of the thigh. In making my incision I was careful to cut lightly over the tumour, so as not to divide more than the skin and fat. I next proceeded to clear the artery in the lower part of Scarpa's triangle. In doing so I found the parts more matted together and thickened, and the depth increased from the plastic and serous effusion to a much greater extent than the external appearances would have led me to expect. I required to take great care in clearing and drawing aside the inner edge of the sartorius, which, instead of being loosely connected as usual, was adherent. The sheath of the artery, however, was not so affected, and was readily recognised and carefully opened, and the artery cleared for passing the aneurism-needle. The vein, much distended, was felt bulging under the artery. The armed needle was then carefully passed round the vessel, the ligature left *untied*, and the ends held by an assistant. I next proceeded to tie the femoral below the aneurism in Hunter's canal. The fascia over the outer edge of the sartorius was freely divided, and the edge of the muscle cleared. Here a difficulty occurred, not from adhesion of the margin of the muscle at the part cleared, but owing to the body of the muscle over the aneurism being blended with the tumour, and forming part of the false sac. I found I could not turn over the muscle or draw it aside, so as to expose the aponeurosis covering the artery, without using such force as would have endangered breaking up the limitation of the aneurism. I had, however, foreseen this difficulty, and accordingly I divided about half the breadth of the sartorius, so as to expose and reach the vessel, which here lay very deep, the depth being increased by the proximity of the aneurismal tumour, as I wished to tie the artery as close to that as I could. When I had passed this ligature, I tied it firmly, and then proceeded to tie the upper ligature, which had also been applied as close as possible to the swelling. So soon as the upper ligature was tightened, all pulsation and sound ceased, and the appearance of tumour was almost effaced. The long wound was then closed by points of suture, a slip of dry lint placed over it, and retained by slips of adhesive plaster; the foot, leg, and knee were wrapped in cotton wadding, and the patient placed in bed, with the knee very slightly bent, and laid on its outside on a soft pillow.

When he recovered from the chloroform he was a little sick, and vomited. An opiate was administered. The milk and farinaceous diet was ordered to be continued. The patient progressed very favourably, and required little treatment, except medicine and enemata to act on the bowels, which were very constipated, so as to prevent straining at stool, and the wound healed well. No marked alteration in the temperature of the limb occurred after the first two days. On the twelfth day after the operation, the lower ligature came away when I was dressing the wound, and without any appearance of blood. Slightly stimulating lotions were used to wash the points of the wound which had not cicatrized, and support was given by strips of adhesive plaster. On the 25th of April I had to leave for London, and I visited him on that day (the eighteenth after the operation). He was looking well and cheerful; pulse 86, and soft, and his tongue clean, the wound looked well,—in fact, except where the upper ligature hung out, and one or two other points, it had united; and I considered him almost, if not altogether, out of danger. I left Dr. Dunsmure, who took charge of my cases, to look after him as regarded the surgical treatment. From that gentleman I received a letter, informing me of a somewhat unexpected and sudden change in the progress of the case:—

"You left on Saturday the 25th. On Sunday I got a note saying that after straining at stool, four drachms of blood had come from the incision. On visiting him I found no trace of hemorrhage at either of the ligatures, but the wound had opened over the sac, and a clot of blood was lying in it; his pulse was quick, 120, and his skin hot. Mr. Miller had ordered him aconite, which made him sick. All that I did was to enjoin quiet, cold to the wound; and, as his tongue was loaded, I ordered him a blue and compound rhubarb pill. On Friday, when I saw him with Mr. Miller, he looked more than usually pale, and his pulse was still quick, but the skin and tongue were better. He had had pain in the right side, and some cough, both of which were relieved by a poultice. I ordered him a better diet, wine (claret) and iron, and to-day his pulse is 96; the wound is almost healed, the part over the sac is healthy, and I have no fear of him. I took hold of the ligature, but it is not yet sufficiently loose to come away."

After this the bad symptoms seem to have disappeared, and, on my return to Edinburgh on the 11th May, I found him looking very well, the wound healed except at the ligature, which I found was lying loose, and therefore removed it. From this time nothing worthy of record occurred. He was allowed to walk at first with a crutch, and subsequently to use the limb. He was lame for some time owing to the stiffness of the knee, but this gradually disappeared, and he now uses the leg perfectly. For some time after the operation I directed him to use a flannel roller to support the venous circulation in the limb. The cicatrix was narrow and firm; not the slightest pulsation or bruit to be felt or heard, no appreciable venous congestion, and his general health excellent. To-day (10th June, 1869) I examined Mr. K. As already stated, the aneurism is thoroughly cured; not the slightest pulsation or thrill can be felt; but the appearance of the limb indicates some obstruction or alteration in the venous circulation of the part. The right thigh is greater in circumference by one inch than the left. The swelling is neither tense nor œdematous, but soft and elastic. The cicatrix is thinner and broader than it was eight months ago; whilst towards the groin numerous small superficial veins are seen dilated and slightly tortuous; but the common femoral and great saphena veins, which were distended and varicose before the operation, seem now of their normal size.

Remarks.—Since the time that Dr. William Hunter first drew attention to the subject, numerous observations have been recorded in reference to the pathology and treatment of varicose aneurisms, but, with few exceptions, these have been cases in which the disease was situated at the bend of the arm, and in most of them the operative procedure has been the same as that for ordinary false aneurism in the same position—viz., laying open the sac and tying the wounded artery above and below the opening; and in some of the cases ligature of the affected vein has also been practised.

In one or two cases the brachial at the middle of the arm has been tied, but not with results that encourage repetition of the Hunterian method. Indeed, in the upper extremity the ligature of the wounded brachial artery above and below the opening, and gentle compression of the injured vein, answers sufficiently well, and the operation is not likely to be attended with bad results. It is, however, very different with regard to such aneurisms in the femoral region.

All surgical authorities are agreed as to the great danger which attends obstruction of the femoral artery when complicated with any lesion of the accompanying vein, gangrene being the almost invariable result. So much have the risks of such a complication influenced practice, that even in cases of ordinary traumatic false aneurism of the femoral, in the position of Hunter's canal, an exception has been made to the general rule of operating in false aneurism by direct incision into the sac. Thus, in cases where the traumatic aneurism is of some standing, and the parts condensed, it is considered better, in the case of the femoral artery, to tie the vessel by the Hunterian method in Scarpa's triangle, lest, from the close proximity of the vein and the condensation and matting of the wounded parts, the latter vessel might be injured in operating by the direct method; and Professor Syme and others have recorded cases showing the success of such treatment.

In considering what method of operation I should follow in the case of K., I could find but little information in surgical works as to the treatment of traumatic varicose aneurism of the femoral, either as regarded general principles or the results of actual practice. As I have already said, most of the observations of Hunter, Park, Hodgson, Breschet, Sabatier, and Dupuytren, had reference to varicose aneurisms at the bend of the arm, and the general rule laid down, as drawn from such cases, was to open the sac and tie the vessel as in false aneurism—a rule repeated, I see, in the last edition of Professor Erichsen's "Surgery," as applicable to varicose aneurisms generally.

The only author who differs from this practice is the late Mr. Lizars, who, speaking of this form of aneurism at the elbow, advises tying the artery above and below the wounded point without opening the sac. His reason is, the risk of phlebitis, if we interfere with the vein; and I recollect seeing him perform this operation in a small varicose aneurism of the brachial in the Royal Infirmary. At the bend of the arm, however, the results of the ordinary operation have shown that the risk Mr. Lizars dreaded was so slight that his plan has not been generally followed.

In looking to the history of cases of this aneurism in the thigh, I could find very few cases recorded, still fewer where any operation had been performed. Several of the cases which had done well without treatment were evidently cases of aneurismal varix, and not of varicose aneurism. It is essential to remember, in reference to treatment, that whatever symptoms these two diseases may have in common, such as the peculiar "bruit," the state of the veins in the affected limb, or in regard to the constitutional effects consequent on admixture of venous with arterial blood, they differ in this important feature, that in aneurismal varix we have the vein and artery closely adherent and communicating directly, and that, although both vessels undergo dilatation and some alteration in structure and function, there is no aneurismal tumour involving the risks incident to all aneurisms, and consequently in it all that is generally required is moderate support, to the venous circulation by bandages, elastic or laced stockings. In varicose aneurism, on the contrary, the false sac which communicates with both vein and artery, has a constant tendency to increase, burst, and diffuse its contents into the limb, or else lead to ulceration of the skin and fatal hemorrhage.

The records of traumatic varicose aneurism of the femoral or popliteal are very meagre. I can find only two cases detailed, and one doubtfully alluded to by Sabatier. Both the detailed cases were in the popliteal artery. One case occurred under M. Larry, Director of the Military Medical School at *Toulouse, and uncle* of Baron Larrey. In that case amputation was performed. In the other case, under the care of Dr. Dorsey of Philadelphia, the disease followed a gunshot wound. The femoral artery was tied in the middle of the thigh, and hemorrhage supervened and destroyed the patient. Mr. Hodgson, in his work on the blood-vessels, suggests that ligature of the femoral in Scarpa's triangle would be the proper plan of treatment. The diminution of the force of the blood after the ligature, he thinks, would favour the formation of a coagulum, which would finish by filling up the sac, and obliterate its opening of communication with the vein; but he adds," I do not think, however, that any one has yet tried this operation."

Since operating on the lad K., I have learned from Mr. Paget that Mr. Lawrence operated by Hunter's method in a case of varicose aneurism of the thigh; but gangrene came on, amputation was found to be necessary, and the patient died. There is a brief notice of the case in the Catalogue of the Museum of St. Bartholomew's Hospital, vol. ii., Descriptions of Casts; but there are no details given.

In deciding on the method I should adopt, when I found that compression could not be continued with any hope of success, it appeared to me that I could scarcely trust to ligature of the superficial femoral in Scarpa's triangle; for, though I believe that to be the safest procedure in certain cases of simple traumatic aneurism in the thigh, the conditions are very different in the varicose. In a simple traumatic aneurism of the femoral artery in the middle region of the thigh, where some time has elasped after the injury, the dense aponeurotic structures confining the wounded vessel and extravasated blood in a narrow space, assisted by the condensation of the surrounding cellular tissue resulting from plastic effusion, serve to form an amount of limitation and circumscription almost equal to the sac of a true aneurism, and to favour consolidation of the blood-clot; so that when the force of the direct blood-current is shut off, gradual consolidation and obliteration take place, as in cases of true aneurism. In traumatic varicose or arterio-venous aneurism, on the other hand, whilst we may have similar limitation as regards the surrounding parts, we must keep in mind that through the interior of the sac there is a communication more or less free with the large femoral vein; so that the retrograde current of blood will meet with no resistance in that direction. Complete consolidation of the contents of the sac could scarcely be looked for, and, as the collateral circulation enlarged, the retrograde current would become stronger, and in all probability, the diseased condition would be re-established.

The plan generally adopted in varicose aneurisms at the bend of the arm I have already indicated as being inapplicable in the thigh; for if surgeons avoid operating in the usual manner for ordinary traumatic aneurisms of the femoral, from dread of injury to the vein, what is only a risk in that case becomes a certainty in varicose aneurism; because in it the artery and vein already communicate in the sac, and opening the sac, therefore, implies more or less interference with the vein, and would be followed by the usual bad results. Careful consideration of these circumstances induced me to adopt the plan of tying the femoral artery above and below the sac, in such a manner as to avoid opening or injuring it, by the operative procedure I have described in the case. By doing so, I trusted that all arterial retrograde circulation would be obviated, that coagulation of the contents of the sac would take place, and that the wound of the vein, communicating with the sac, would thus be closed, and that the venous circulation would be restored to its natural channel. So far as the artery is concerned, my expectations have been fulfilled, and the aneurism is thoroughly cured; but, judging from the present appearance of the limb, some slight obstruction to the venous circulation would seem to exist, and, though not productive of any inconvenience at present, will require to be remedied by the use of an elastic stocking to support the returning column of blood, and so avoid any tendency to varix.

From a full consideration of the general principles on which the method of operating I have described is founded, as well as from the successful result of the case narrated, *I feel satisfied* that it is the proper mode of procedure in *cases of varicose aneurism.*

In closing, I would merely advert to the sudden and unexpected invasion of peculiar and serious constitutional symptoms so late as the nineteenth day. I do not pretend to speak decidedly, but my first impression when I received Dr. Dunsmure's letter was, that some small detached portion of the contents of the sac had found its way into the vein, and given rise to embolism, although the favourable termination of the symptoms scarcely warrant that idea; and, possibly, it was mere febrile disturbance, due to some irregularity in diet. —*Edinburgh Medical Journal, July*, 1869, *p.* 1.

54.—ON THE TREATMENT OF ANEURISM BY IODIDE OF POTASSIUM.

By Dr. George W. Balfour, Physician to the Edinburgh Royal Infirmary, and Lecturer on the Practice of Medicine and on Clinical Medicine.

[For Dr. Balfour's previous article on this subject refer to *Retrospect*, vol. lviii. p. 198.]

During the past twelve months I have had under my care several cases of thoracic aneurism, all of which have been treated with the iodide of potassium, and in all of them this treatment has been attended with such a measure of success as fully to justify the encomium I formerly pronounced upon it as holding out a better prospect of relief, if not of cure, than any other method hitherto devised for the treatment of internal aneurism. (Edinburgh Medical Journal, July, 1868, p. 42.) In my former paper I carefully pointed out the many fallacies which embarrass us in making up our mind as to the value of any special treatment in such a disease as thoracic aneurism, in which the symptoms occasionally undergo spontaneous abatement, without any real improvement having taken place; the cases I am now about to relate will, I think, convince even the most sceptical inquirer that in many cases at least, a real improvement does take place, permanence of which must depend upon various circumstances, over which neither physician nor physic have any control. The value of the treatment is shown in the fact, that not only relief to symptoms, but positive improvement has been obtained in every case which has submitted to it for a sufficient length of time; while there are many facts which tend to prove that iodide of potassium is not only curative in aneurisms already developed, but that it also acts remedially and prophylactically in the aneurismal diathesis; a much better thing both for physician and patient.

Aneurism of the Aorta.—Peter Reid, hotel-porter, aged 46, admitted into Ward VII., June 18, 1868. This man was drunk when admitted, having avowedly taken spirits to nerve himself for his apparently rapidly approaching dissolution. He had intense dyspnœa, amounting to complete orthopnœa, violent, harassing, but dry cough, and felt and looked as if on the point of suffocation, while a large, soft, projecting and pulsating tumour seemed to threaten him with death in another form. He was ordered at once fifteen minims of chlorodyne, to be repeated every half-hour till the cough was quieted, and also

℞. Pot. iodidi, ℥ss.; infusi chiratæ, ℥vi. Solve.
Sig., one tablespoonful (℥ss.) three times a day.

He was also, of course, desired to keep his bed, in which he was supported in a semi-erect posture, and to restrict his food and drink. Within twenty-four hours this man expressed himself as somewhat relieved, and in a few more he began to breathe more freely. He is an old soldier, and about 24 or 25 years ago was cupped in a military hospital for palpitations, which continued more or less after his discharge, till about ten years past, in the end of February (1858), he came into this hospital on account of excruciating pain in the right side and down the right arm, which he had felt for some months previously. There was also at that time a slight swelling, accompanied by pulsation, to the right of the sternum. This pain was always most excruciating in winter, when he caught cold, or had any unusual exertion. After eighteen months the tumour protruded externally, and the pain then ceased to be so agonising. During the last eight or nine months the tumour has grown more rapidly than it has done for years, and this he attributes to the extreme violence of the cough. He has been under various physicians both here and in London, and has been, so far as he knows, mainly treated with digitalis and hyoscyamus internally, and the application of ice externally. To the right of the sternum there was a large pulsating tumour, extending from the third to the seventh ribs, and projecting fully an inch and a half beyond the level of the ribs. Part of this tumour was solid, but part, rather beneath the middle, was soft, painful to touch, projected conically, and pulsated fluidly. Dulness extended for fully five inches all round the centre of the tumour, passing into the liver, dulness beneath. The pulse in the right arm was smaller than that in the left. The heart's apex beat between the sixth and seventh ribs and one inch to the right of the nipple, but there was no apparent hypertrophy, and the cardiac dulness was about normal. There was displacement but not enlargement, neither was there any anormal bruit either over the heart or tumour. The right pupil was somewhat dilated. There was considerable pain in the side and down the right arm, but nothing to what it had been. After the patient had somewhat recovered from his frightful condition on entrance, a belladonna plaster was applied over the tumour, and the chlorodyne was gradually stopped as the cough ceased, which it had almost entirely done by the 12th of August, at which date the patient looked, felt, and expressed himself as much relieved; the pulsation in the tumour was much less forcible than formerly, and the tumour itself was flatter and more solid. On the 31st of August an ice-bag was substituted for the belladonna plaster, but was only continued for four days, because, although it felt comfortable to the patient, and relieved the distressing pulsations, it increased the cough very much; the belladonna plaster was, therefore, reapplied. At this date he expressed himself as feeling very comfortable, and able both to breathe and swallow easily, neither of which he could do formerly, while the tumour was gradually decreasing. On the 21st of September, however, the cough had again become very troublesome, accompanied by a distressing tickling sensation in the larynx, and an increase in the aneurismal pulsations, which were just as bad as they had formerly been. Chlorodyne made him sick, so he was ordered—

℞. Morphiæ hydrochloratis, gr. i.; acidi hydrochlorici dil., ♏v.; acidi hydrocyanici dil., ʒ ss.; syrupi scillæ; aquæ fontanæ, āā ℥ i.

Sig., One teaspoonful every two or three hours. Fifteen-minim doses of chlorodyne to be given p. r. n., if he can be persuaded to take them; the iodide of potassium to be continued thrice a day, and the exterior of the larynx to be painted with iodine liniment. In a couple of days the cough was much relieved, and he continued improving up to the 8th of November; on the evening of which day he was suddenly seized with inability to move his left arm, and complete loss of pulse in it; he expressed himself as feeling great pain in the left side of the heart, but there was nothing anormal in the heart's action. By next day the pulse had returned, but the arm continued feeble for a few days. On the 10th of November a very violent serious diarrhœa set in, for which he was ordered—

℞, Plumbi acetat., gr. iii.; pulv. opii, gr. i. Ft. pil. Mitte tales, xii.

Sig., One to be taken every hour till the diarrhœa is checked, or sleep ensue; to be gradually dropped as improvement takes place.

Believing this diarrhœa to be a mere accident and not an evidence of iodism, the iodide of potassium was not stopped. The diarrhœa was much relieved by the next day, and ceased entirely in a day or two. At this date, the end of November, after five months' treatment, the patient's improvement was quite remarkable, the pulsation in the tumour very much lessened, the tumour itself perfectly solid at every part, and visibly decreased in size. I still, however, kept the patient in bed, and continued the treatment, in the expectation that I should ultimately have the pleasure of seeing the complete disappearance of even this large projecting tumour—an expectation which my experience leads me to consider well founded. Unfortunately, about the end of December, *my patient caught cold*; so I then thought; I am now inclined *to attribute to another cause* the violent cough which then set in. Upon the *30th of December at the visit*, he was seized with violent spasmodic pain in the left short ribs, for which a mustard cataplasm was applied, with full doses of chlorodyne, to be repeated as required. This pain was speedily removed, but now and for some time afterwards he complained of feeling choky, and was harassed by a dry clanging cough, which resounded from one end of the ward to the other. For this iodine liniment was repeatedly painted over his chest, opium and morphia in every conceivable form, and in almost poisonous doses, hydrocyanic acid, and inhalations of chloroform, and of a solution of conium in chloroform were unavailingly persevered in for about a month. Towards the end of January, fifteen-minim doses of chlorodyne being still allowed p. r. n., other narcotics were stopped, and five minims of tincture of aconite B. Ph. were added to each dose of his iodide of potassium mixture, of which he had four doses in the day, each containing half a drachm of the iodide. The aconite was ordered to be gradually increased by drop doses daily. How far it was pushed I am not quite aware, because it was added by the house-physician himself. I am well aware, however, that the relief to the cough was very slight, and I also know that towards the end of February I happened to look into the wine-roll, and found, to my horror, that Reid was getting four ounces of brandy daily. This I immediately knocked off, with far more relief to his cough than I had been able to give him by all the narcotics I had been so lavishly pouring into his system. I found that he had over-persuaded the house-physician, stating that he was weak, accustomed to stimulants, and would never get better without them—all the ordinary arguments for self-indulgence. I found also that he had commenced with a pint of porter on 3rd December; that this had done him no harm; but an advance to four ounces of whisky on the 24th December had been very speedily followed by an exacerbation of his cough, not lessened by a retrogression to a whole bottle of pale ale on the 12th of January, probably increased by a change to four ounces of brandy on the 25th of January, and only remedied by knocking off all stimulants on the 25th of February. I at once saw that no more good was to be done: the element of mutual confidence was lost. I therefore permitted Reid to rise every day and walk about the ward; the iodide mixture was continued, but the aconite was stopped; and I must say, that not one of my patients ever rose from their beds such a scarecrow as Reid did. This I attribute partly to the stimulants he had unfortunately obtained, and partly to the narcotics by which the evil results of his self-indulgence were so unavailingly sought to be neutralised. He was kept in hospital for three weeks longer, during which time he continued to improve, and was then dismissed on the 20th of March, to go to his home in London. Thus this poor dying creature was, after nine months' treatment, dismissed in a comparatively active condition, and both looking and feeling well. A cast taken from the projecting tumour, about a month after his admission, and one taken just the morning of his discharge, show a very evident diminution in its bulk; while, in a letter which I have recently (24th May) received from my former house-physician, Mr. Frank H. Hodges, he says—"I called on Peter Reid on the 28th of April, and found him in a very satisfactory condition; the tumour had considerably diminished in size (since his discharge), he was quite free from cough, and went out for a constitutional daily."

The next case is not only a very well-marked but also a very remarkable case of *aneurism of the aorta*, one which even taken singly would be sufficient to attract attention to the treatment propounded, but which, when regarded as only one of a series, provides indeed a very forcible illustration of the good effects to be derived from it.

Andrew Jamieson, a carter, aged 40, admitted into Ward II. under Professor Bennett's care, January 31, 1868. About eighteen months ago the patient had an attack of pleurisy in his left side; with this exception, he has been always healthy. About twelve months ago, without any known cause—as he is not aware of having strained himself in any way, though constantly in the habit of lifting heavy weights into his cart—he first felt a severe and constant aching pain in the left side of his chest, over a spot about the size of a crown-piece, situated about two inches above the nipple. This pain was much increased on making any exertion or on stooping. To relieve it he applied several mustard poultices, and took cod-liver oil, without, however, deriving any benefit. Notwithstanding the pain he suffered, he continued work up to July, 1867, but he was then compelled to give it up entirely on account of his sufferings. The pain was now more severe than ever; his breathing short and wheezing; he had a troublesome cough, worse on making any exertion; he experienced a choking feeling when he stooped, and he felt a difficulty in swallowing any solid food, which seemed to stick opposite the upper margin of the sternum. His voice also now became weak and somewhat hoarse—*vox anserina*—and he felt a disagreeable pulsation in his chest. For these symptoms he unavailingly sought relief in the Glasgow Infirmary, and finally came to Edinburgh. Up to the period of admission the pain had spread very much over the upper part of the chest, but he does not think that the other symptoms had increased; he has never had any headache or hæmoptysis. The pulse at the left wrist is almost imperceptible. The right pulse is 84, of moderate strength and slightly jerking. Cardiac dulness, not noted. The heart's apex beats three inches below, and a little external to the nipple line. Only the first sound is heard at the apex; both sounds are heard at the base normal. Over the upper part of the left side of the chest, anteriorly, there is a distinct bulging, most marked over the second rib and second intercostal space. Over a spot about the size of a crown-piece, there is a distinct impulse communicated to the stethoscope; over the left side, there is dulness of percussion from the clavicle to within two inches of the nipple line, extending across the opposite sterno-clavicular articulation. Over this dull area a double blowing murmur is to be heard; "the second sound, however, being very feeble, and heard most distinctly over the sternum, over the articulation of the second rib, also heard over the great vessels at the root of the neck." At the right apex the inspiration is harsh and the expiration prolonged; over the left apex, anteriorly, the double murmur referred to completely obscures the sounds of respiration, which are everywhere else normal. The patient has a very loud and frequent cough, of a clanging metallic character, without expectoration. The patient complains of severe dull aching pain on the left side of the chest, from below the clavicle to the level of the nipple; this occasionally extends to the right side. He gets only occasional short snatches of sleep, owing partly to the pain referred to, and partly to the frequent recurrence of a choking sensation, referred to the throat. His tongue is clean, appetite bad, but bowels regular. Urine spec. grav. 1030, with deposit of urates, but otherwise normal. There is a slight puffiness of the integuments over the upper part of the sternum, and the veins over the dull area are visibly enlarged. He was ordered steak diet (Royal Infirmary diet tables), and—℞. Tinct. ferri perchlor., ʒi.; aquæ, ℥vi.

Sig., One tablespoonful three times a day.

4th February, the patient continues much the same as on admission. He still chokes on his food, and requires "a drink to wash it down." His cough and spasms of choking are very violent, and of frequent recurrence. Ordered to take fifteen minims of sulphuric ether in water, when the cough comes on. 12th February, pain and cough both worse; ordered—

℞. Tinct. camph. co., ℥i.; mucilaginis, ℥i. M.

Sig., ʒi. pro dose, p. r. n.

He continued not certainly improving till 17th February, when it is stated that the pain is better than it has been; slept two or three hours in the night. Complains of difficulty of breathing, much worse if he makes the slightest exertion. Pulse 100, of moderate strength; ordered—

℞. Potassii iodidi, ʒii.; aquæ, ℥vi. Solve.

Sig., Two tablespoonfuls three times a day.

Next day, 18th February, the pain is said not to be so bad as it had been; the pulse was 88, and of moderate strength; the cough and dyspnœa still continued. He was ordered to take fifteen minims of chlorodyne in water at bed time. On 22nd February it is reported that he did not cough so much last night, and that the pain no longer passes across the chest, but is confined to *one spot, the size of a crown-piece*, between the clavicle and nipple; the pulse *is 84, and of moderate strength.* On 3rd March, it is reported that the cough was more troublesome during the previous night, and that he complained of slight soreness across the lower part of the chest on coughing. Ordered to discontinue the iodide of potassium mixture. On 5th March the patient was ordered full diet instead of steak diet. On 10th March, his cough being very troublesome, he was ordered—

℞. Sp. chloroformi, chlorodynii, āā ʒ iv.; aquæ, ℥ vss. M.
Sig., One tablespoonful when the cough is troublesome.

The patient says the pain is worse in the left side of the chest to-day. He thinks it has not been so well since he left off the iodide of potassium. Ordered to recommence his mixture, taking only one tablespoonful three times a day, so that he now only gets ten grains of the iodide for a dose. He continued much the same, not complaining of the pain till the 21st, when he was ordered to discontinue the iodide of potassium mixture. On 23rd March, it is reported that the patient says he cannot see distinctly when reading or writing, as if a mist came before his eyes; he has noticed this since the 19th. On 31st March, he was ordered to apply pounded ice, in a bag of thin gutta-percha, over the pulsating tumour, on the left side of the chest, for one quarter of each hour during the day. On the 16th of April the cough was rather worse, and he was ordered to resume the iodide of potassium in twenty-grain doses three times a day. At this date the dimness of sight formerly complained of is reported better. On 24th April, the iodide was again discontinued, because of slight watering and weakness of the eyes. On 28th April, it is reported that the cough recurred with great violence during the preceding night, with great difficulty of breathing, loud snoring noise heard over all the chest posteriorly with a rattling in his throat; no dulness posteriorly, vocal resonance increased equally on both sides. Ice to be discontinued. Ordered to recommence the iodide of potassium, in twenty-grain doses three times a day. On 20th April he was ordered—

℞. Spt. æth. sulphurici, ʒ iii.; chlorodynii, ʒ ii.; decoct. senegæ, ℥ vi. M.
Sig., One tablespoonful when the cough is troublesome.

30th April, the breathing is said not to be so difficult, his cough continues, the expectoration frothy and purulent. On 8th May, it is stated that the area of dulness remains unchanged; the sounds heard over it are, however, much diminished in intensity, and the blowing is scarcely audible. Percussion over the lungs is normal, but loud sonorous râles are everywhere audible, with prolonged expiration, especially on the right side posteriorly. The cough is not so harsh and barking as formerly, but it is now accompanied by a most copious purulent expectoration, especially at night. All his medicines to be stopped except the iodide mixture, and the following draught:—

℞. Chlorodynii, ♏x.; spt. æth. chlorici, ʒ ss.; mucilaginis ʒ i.; aquæ, ʒ x.
M. ft. haustus nocte sumendus.

On the 22nd of May, he was ordered a hot poultice, on account of a soreness in the chest, most felt after coughing. 9th June. Since last report he has continued much the same. He sometimes complains of pain in the chest, still has cough, with profuse purulent expectoration, and loud sonorous râles both anteriorly and posteriorly. He still continues to take the sedative draught and the iodide mixture. Upon percussion, the dulness is found to have extended more towards the right side, now reaching to about the middle of the clavicle. On 23rd June, it is stated that the patient complains of great pain in the chest, which seems to be increasing, and for which he had poultices frequently applied. He also complained of great weakness, for which he got two ounces of port wine daily. His breathing was however easier, the cough and expectoration greatly diminished. The pulsations over the now greatly enlarged dull area are however increased, and the double blowing murmur is more distinct than formerly. Posteriorly, the blowing murmur can also be distinctly heard about the sixth dorsal vertebra. 26th June. Complains of pain in the left side being increased. Poultices ordered. 27th June. Still complains of great pain in his left side. Twenty minims of a solution, containing nine grains of hydrochlorate of morphia to the ounce were injected subcutaneously over the painful part. He continued to improve slightly. On *16th July, it is stated* that the patient feels very well, has little cough or expectoration; he takes his food well, and has very little pain. On 23rd July, it is stated that the patient continues better, his breathing easier, cough and expectoration almost gone, and for the last two or three days he has been getting up and walking about the ward, though still unable for any exertion, or even for much gentle exercise. He continues the iodide of potassium. At this time, Ward II. being shut for the autumn, he was transferred to my care in Ward VII. Shortly after being sent up to me, he walked through the whole ward to the water-closet, which is somewhat draughty, and back again, and was thereupon seized with a return of his cough, copious purulent expectoration, and violent pain in the left shoulder, and over the large pulsating tumour, on the left of which a small projection about an inch square was thrown out, over which there was a red blush. He was strictly confined to bed, a belladonna plaster applied over the tumour, with half a drachm of the iodide of potassium in infusion of chiretta three times a day, also.

℞. Syrupi scillæ, ℥ ij.; spt. lav. co., tinct. opii ammoniatæ, āā ʒ iv.; syrupi simplicis, ʒ i.; aq. menth. piperitæ, ℥ ij. M.

Sig., One tablespoonful every three hours, and fifteen minims of chlorodyne to be given additionally when required. In a few days he was relieved. The projection subsided, and he seemed going on favourably, but the annual cleaning of the wards then came on, and on the morning of the 13th of Aug., he was unfortunately permitted to walk down two stairs, each one storey high, to Ward No. I. This, however, he seemed to bear pretty well; he expressed himself as none the worse, but his cough was most certainly not thereby improved. Upon his return up stairs, a week subsequently, I had him carried in a chair, but the exertion, and possibly the somewhat damp air of the newly-washed ward, were too much for him; a violent exacerbation of his cough took place, accompanied by a great increase in the size of the tumour, which was covered by a red blush; there was complete loss of the pulse in the left arm, accompanied by coldness and excruciating pain of the limb; his expectoration was copious and purulent, and occasionally both streaked and stained with blood. The left arm was ordered to be swathed in flannel, to continue his cough mixture, to have also fifteen minims of chlorodyne p. r. n., to have his iodide mixture four times a day, and to have a large belladonna plaster applied over the whole tumour. For many days he took two drachms of chlorodyne daily, besides his cough mixture,—indeed, the orders were to give him a full dose of chlorodyne at once when required, so as at all hazards to keep the cough quiet. He bore this treatment well, his tongue kept clean, and his appetite fair; in eight days the expectoration began to lessen, and the cough and pain to cease. By the 31st of August they were almost gone, and the expectoration reduced to a trifling amount of mere mucus; the arm was again warm, and feeling like itself; the pulse restored to the wrist, though still very feeble; the tumour somewhat diminished in size, and apparently not pulsating so strongly; he was lying quietly in bed reading, and expressed himself as feeling quite a new man. After this he was kept constantly lying on his back in bed for the next nine months; for the greater part of this he was on a water-bed; he had occasional relapses of his cough, especially during the changeable weather of autumn and early winter, for which a tolerably free use of chlorodyne or other opiate was required; but there were no more threatening symptoms in regard to the aneurism, which continued steadily but slowly to improve. During all the next nine months, he continued to take two drachms of the iodide of potassium daily, with the exception of twice, when it was omitted for a day or two on account of gastric irritation, as evinced by pain and vomiting. At last, towards the end of May, the tumour seemed sufficiently consolidated, and all the other symptoms so moderated, as to warrant the patient's being allowed to get out of bed. Although he looked well and healthy, yet I considered it proper to prepare him for his exertion, by adding one drachm of the iodide of iron to his iodide mixture; this he took from the 18th to the 21st of May, when he was allowed to get up; the iodide of iron continued in combination with infusion of calumba, and the iodide of potash omitted. I find I have omitted to state, that when I first made up my mind to allow *Jamieson to rise*, finding his pulse rather more rapid than I liked, which I now believe was partly the result of a fearful joy, I put him for several days upon gradually increasing doses of tincture of aconite, along with his iodide mixture; this having been pushed as far as I thought proper, without any decided lowering effect, I then placed him, as I have just stated, upon the iodide of iron. At this time his pulse was 100, much fuller in the right than in the left arm; the skin moist; his cough so slight as to be inappreciable, never heard during visit; his expectoration merely a trifling catarrhal mucus; his voice is still thin, and somewhat feeble, but distinct, and very different from what it was; respiration everywhere natural, and the percussion sound posteriorly normal. Anteriorly, the apex beat is feebly felt between the sixth and seventh ribs, a little outside the nipple line, the heart being probably elongated, and certainly displaced, the lung covering it. Just inside of the left edge of the sternum dulness extends from the liver quite up to the lower border of the first rib. In the nipple line, dulness extends transversely to a distance of two inches from the edge of the sternum. Just at the inner edge of the left clavicle, there is a small patch of clear sound; with this exception, dulness extends along both clavicles, from about one inch and a half, to the right of the right edge of the sternum, to about four inches to the left of its left edge. The dulness on the right side is bounded by a semicircular line joining the sternum at the upper border of the second rib. On the left side the dulness is also bounded by a semicircular line, the centre of which is about the middle of the clavicle, and in this position it does not descend beneath the middle of the third rib. The sternal ends of both clavicles are dislocated, the right to the extent of half an inch, the left to about a quarter of an inch, on the upper part of the sternum; there is considerable puffiness, and over it, and over the dull portion to its left, the veins are enlarged and tortuous. A finger placed in the tracheal fossa feels a solid mass behind the sternum. Over the apex beat, the first sound of the heart is audible, somewhat obscured by a rough double bruit, heard loudest at the middle of the sternum, just at the junction of the fourth rib; this is propagated upwards loudly and roughly into both carotids, less so into the right subclavian, while over the left subclavian, in the dull portion already mapped out, we have a solid tumour, pulsating, but not very forcibly, and only with a movement of elevation, and none of dilatation, over which no bruit whatever is heard, merely a dull thud. The patient has now no difficulty in breathing or swallowing; he walks up and down stairs, and about the airing ground; he says he has now no cough. The aneurism seems still going on consolidating. I have again placed him for precaution's sake upon the iodide of potassium, but he is now ready, and I believe fit, to be discharged. I shall, however, protest against his testing his powers of procuring a livelihood for himself by a return to a laborious occupation. I sent this patient recently down stairs to Dr. Bennett, who exhibited him to his class, and, I am told, expressed himself satisfied with the reality of the improvement which had taken place.

[Several other cases equally interesting are reported by Dr. Balfour.]—*Edinburgh Medical Journal, July*, 1869, *p.* 47.

55.—A SUBSTITUTE FOR ACUPRESSURE.

By Dr. James Andrew Milne, Aleppo, Syria.

There are some cases in surgery where none of the modes of acupressure now employed seem to be applicable, and as deligation is not desirable, I have had constructed delicate forceps to use as a substitute. The body of the forceps is a little more than an inch in length, the two halves cross to furnish a grasping power to the beak—which is of delicate size, standing nearly at a right angle with the body—and in the one represented, three-fourths of an inch in length.

Its mode of action is simple and effective. The beak passes into the wound and clasps the vessel, bringing its two surfaces in contact, and then retaining *them until adhesive* inflammation takes place, and a firm clot forms. The body rests upon the surface, and is retained in place by a strip of adhesive plaster.

This mode may be considered applicable in all cases where acupressure is employed, and possesses the advantage of greater ease of application and removal. But its superior merits will be found in occluding vessels in their continuity. In applying a ligature, or acupressure, to an artery in its continuity, an incision has to be made of sufficient size to admit of the necessary manipulations, and lay the vessel bare to some extent, passing the ligature under the vessel; or in applying the mode of acupressure employed in these cases, it is disturbed from its bed, and by the two procedures separated to a considerable extent from the surrounding tissues, and its vascular connection cut off for some distance from the point of strangling. Softening and degeneration are the frequent results; and secondary hemorrhage, and many evil constitutional effects are produced.

By the use of the forceps only a small incision is required, and no larger surface of the vessel need be denuded than to admit of the passage of the beak of the instrument. The vessel is not disturbed from its connection with neighbouring tissue or vascular relation.

By thus creating but little injury to the vessel and its surroundings, we materially diminish the danger attendant upon these operations, and simplify the mode of procedure to so great an extent that the strangling of the carotid or femoral is an easy matter, and the occluding of the innominata, subclavian, vertebral, and iliac, much lessened in danger and difficulty.

The time necessary for the adhesion of the two surfaces of the vessel, and the formation of a firm clot, is from thirty to fifty hours, when the instrument should be removed. The wound, which was closed at first, is now freed from all foreign bodies, and left to accomplish a speedy cure.—*New York Med. Record, Feb.* 1, 1869, *p.* 551.

56.—ON THE USE OF CAUSTICS IN THE TREATMENT OF NÆVI.

By T. Holmes, Esq., Surgeon to St. George's Hospital; Surgeon-in-Chief to the Metropolitan Police

[The following is from Mr. Holmes' recent work on "Diseases of Infancy and Childhood," second edition, Longmans and Co.]

"The use of the actual or potential cautery in nævus is very successful. I have repeatedly treated small nævi in exposed situations by passing a needle heated to a white heat in the blowpipe flame, into their tissue at various points, and I think this is a good way of treating those which are too thick to be dealt with by the use of the potential cautery:* for the latter penetrates only a very short distance at each application. But for nævi which are very superficial, no treatment, I think, answers so well as the repeated application of strong nitric acid. It should be applied carefully to the whole surface of the nævus, but not to the healthy skin around it, which may be defended with a layer of oil. The application of the acid substitutes a yellowish-white colour for the red of the nævus, and when the cure is complete it leaves a very slight depression of nearly the natural colour. It may require several applications, but rarely fails to cure nævi which are merely cutaneous. The application of potassa fusa will answer the same purpose, and as it penetrates deeper than the nitric acid, it is applicable to the treatment of thicker nævi; but it is much more painful, and leaves a more evident scar. These two substances answer their purpose so well, that I have not found it necessary to use any other of the potential cauteries.

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* A very convenient and manageable instrument for this purpose has been introduced into practice by Mr. Wordsworth. It is a curved pointed metal stem mounted on a wooden handle, something like the old-fashioned tenaculum. A short distance from the point the stem swells out into a bulb. The bulb and point are heated to a white heat in the blowpipe flame, and the point passed into the tissue of the nævus here and there. The heat of the bulb preserves that of the point, and obviates the rapid cooling which is the chief drawback to the use of the needle as described in the text. The "gas-cautery" invented by Mr. Bruce of the Westminster Hospital is also often convenient in the treatment of nævi.

"The electric-wire cautery is a very efficient and a very manageable form of the actual cautery, since it can be passed under a certain part of the tumour, and be gradually drawn out, dividing some of the vessels, and substituting a cicatrix in their place. Thus a portion of the tumour will be checked in its growth, and then another can be attacked. The plan is tedious, and the surgeon must be prepared for the possibility of hemorrhage occurring during the separation of the sloughs, but I have seen it successfully applied in the treatment of very large vascular tumours.

"Injection of the liquor ferri perchloridi is an efficient method of treating large nævi, and one which has the recommendation, when successful, of leaving hardly any visible trace of its action. But then it is not free from very serious dangers. It acts by coagulating the blood in the vessels, and thus obliterating them. Now if a large quantity of the liquid were thus thrown into a cavity of a vein of considerable size, and the blood in the vessels suddenly solidified, the most dangerous and even fatal symptoms might ensue. Cases of instant death under this treatment have been known; no doubt from the use of too large a quantity of the substance, and from the accident of its having been thrown into a large vein and there producing coagulation of a considerable quantity of blood, which had been carried direct in that state to the heart.

"A case is also on record in which sudden death took place in injecting a nævus of the face with liq. ammoniæ."

In these remarks we fully concur. The perchloride injections are too dangerous to play tricks with. We have seen some narrow escapes with them.

There are few cases of nævus in which the temporary ligature, superficial or subcutaneous, nitric acid, hot needles, or setons, will not effect a cure, with time and patience. The great rule is not to go too fast, and to remember and allow for the contractiie properties of cicatricial tissue. Surgeons and parents alike are apt to look for rapid and immediate results; and unless the slower processes of nature be taken into account, too much may sometimes be done by not allowing the great healing element of time to bear its part in our work.—*Dublin Quarterly Journal, August*, 1869, *p*. 163.

57.—NÆVUS CURED BY INJECTION OF CARBOLIC ACID.

[The following extract is from a clinical report of the practice at the Meath Hospital and County Dublin Infirmary.]

Mr. **Porter** exhibited to his class a child named Margaret B., aged ten months, who had been received into hospital, about six weeks previously, for the treatment of a large nævus, situated on the lower part of the forehead, immediately above the nose. It was venous in character, and when first seen was circular in form and as large as half-a-crown, projecting forwards considerably. He resolved to attempt its solidification and cure by the injection of carbolic acid, and accordingly two minims of pure acid were introduced into the nævus by means of a hypodermic syringe. Such inflammation as followed having been allowed to subside, the operation was repeated, seven times in all, an interval of several days being permitted between each injection. No untoward consequences took place; the skin was not injured; and now, after the seventh operation, the mass had become solidified, and would in due time be absorbed.—*Medical Press and Circular, Aug.* 18, 1869, *p*. 141.

58.—THE PIECEMEAL EXCISION OF NÆVI.

By **Furneaux Jordan**, Esq., Surgeon to the Queen's Hospital, and Professor of Surgery in Queen's College, Birmingham.

[The operation described in the following article has been frequently practised by Mr. Jordan for the last six years.]

An incision is made through the superjacent skin and through the nævus, so as to completely divide it into two halves. Hemorrhage is prevented by pressure on the adjacent arterial trunks. In the face, for instance, where the operation is most useful, pressure on the facial or temporal or supraorbital, one or two or all, arrests the bleeding. If pressure on the main trunks do not perfectly arrest all hemorrhage, one or two points of pressure (with a director) near or even within the incision will. I have often been surprised to find that one or two points of pressure alone sufficed to secure a bloodless condition of a nævoid section. The next step is with clawed forceps and scissors (curved on the flat) to remove each half piecemeal, beginning at the centre, and proceeding to the periphery. There is not the least difficulty in distinguishing the nævoid (capillary, venous, or arterial) from the healthy tissue. The removal of one half should be completed before that of the other is begun. When the nævus is completely removed, there is no hemorrhage on relaxing the pressure. As a rule, it is quite unnecessary to remove any skin; even if involved, it recovers after the excision of the subjacent nævus. If very much implicated, an elliptical portion of skin may be taken away, so that the edges of the wound can be so brought together as still to leave only a line of cicatrix. Whether any skin be removed or not, the edges of the wound should be brought together with silver wire, and moderate pressure effected by means of a pad of dry lint and a bandage.

I believe piecemeal excision to be the best operation in all cases where it is desirable to save the skin; and these are the great majority of cases.—*British Med. Journal, May* 29, 1869, *p.* 490.

ORGANS OF RESPIRATION.

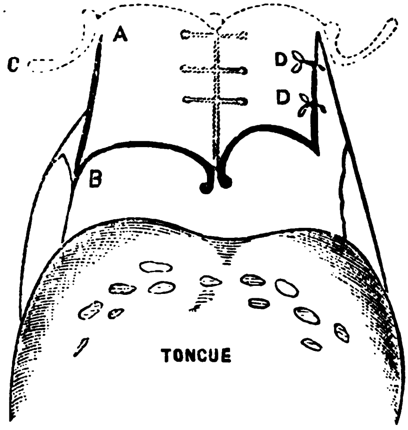
50.—NOVEL PROCEDURE FOR IMPROVING THE VOICE AFTER THE OPERATION OF STAPHYLORAPHY.

Case under the care of FRANCIS MASON, Esq., at the Westminster Hospital.

Every surgeon who has had any experience of congenital cleft palate will, we believe, admit that the principal object for which the operation is usually undertaken—that is, the improvement of the voice,—is seldom attained. In the most favourable cases, however accurately the edges of the cleft may be adjusted, and however well satisfied the operator may be with the result of his manipulative skill, the patients and friends invariably express some, and often a great deal of disappointment that the tone of the voice remains much as it was. A little consideration will suffice to show why the expected improvement does not take place. It should be remembered, that the condition of congenital cleft palate is not that of a mere slit or rent, but is an absolute want of substance in the part; and, in order to make good this deficiency, a "gusset," as it is termed, is required. Now, to make a gusset of living material seems difficult, if not impracticable; hence surgeons are contented simply to bring the edges of the cleft together, union being almost infallible if the muscles be divided in accordance with the plan recommended by Sir Wm. Fergusson. The result of the operation is that the two sides are necessarily put considerably on the stretch, and the soft palate, instead of being freely movable and capable of being brought by muscular action upwards and backwards against the posterior wall of the pharynx, remains as a tight curtain, so placed as to allow air to pass into the posterior nares, causing that peculiar nasal twang more or less constantly noticed in this condition. It therefore stands to reason that the voice cannot be materially altered or improved under such circumstances.

Mr. Francis Mason has devised, and has recently carried out at the Westminster Hospital, a novel and ingenious proceeding, having for its special object the improvement of the voice. Mr. Mason deals essentially with the soft palate, and assumes that the cleft has been already closed by a previous operation, and that sufficient time has elapsed so that the circulation between the two sides has become thoroughly established. He has reason to think that by freely dividing the soft palate on both sides, in the manner about to be described, partial, if not complete restoration of the normal voice may be effected. The object he has in view is so to release the soft palate that it may be brought more closely in application with the back part of the pharynx, and thus, to a certain extent, if not wholly, do away with the disagreeable nasal twang already alluded to. The subjoined diagrammatic woodcut, representing the isthmus of the fauces, seen from the front, will serve to illustrate the steps of his operation. The dotted lines indicate the edge of the hard palate and the hamular process on each side. The cicatrices of the sutures in the middle line of the soft palate, the result of the previous operation, are also shown.

The patient is placed in the recumbent posture, and may or may not take chloroform. The soft palate is completely transfixed with a sharp-pointed knife at A, at the inner edge of the hamular process (C), the outline of which may, in most cases, be distinctly seen in the living subject. The incision is carried downwards from A to B, dividing the whole of the soft palate. A similar incision is made on the opposite side, and the operation is completed by introducing, with a needle in a handle, one or more sutures from before backwards at D, hemming (so to speak) the anterior and posterior mucous edges, thus preventing the newly-made raw surfaces from uniting by granulation. In this proceeding the palato-glossus, palato-pharyngeus, and the tensor palati muscles are purposely divided. The levator palati is not interfered with, or at most only a few of its fibres are cut.



The case upon which Mr. Mason operated is that of the boy, now aged six, whose palate he closed without chloroform in October last (see the Lancet, Jan. 9th, 1869). The result is so far satisfactory that there is a decided improvement in the boy's voice. As this is the first patient upon whom this operation has been performed, it would be premature to form a strong opinion as to the probable results; meanwhile the operation seems to commend itself as being extremely simple, free from danger to important vessels, and not particularly painful—a lump of ice in the mouth for a minute or so would render it almost painless. Moreover, chloroform may be administered (as in this case), vomiting, if it occur, being no disadvantage. There is an ample supply of blood to this part, so that sloughing need not be apprehended; and further, it is a proceeding which may be undertaken at any period of life, and repeated as often as necessary, in case the cut surfaces should unite by granulation. Mr. Mason contends that it can do no harm; and if, on the other hand, it be attended with even partial success, it supersedes any mechanical appliance, and confers an inestimable boon on patients whose condition is distressing both to themselves and to those with whom they associate.—*Lancet, August 7, 1869, p. 198.*

ALIMENTARY CANAL.

60.—CASE OF STRANGULATED HERNIA, WITH PERFORATION OF THE BOWEL, IN WHICH THE OCCLUSION OF THE APERTURE BY LIGATURE WAS SUCCESSFULLY ADOPTED.

By Dr. Patrick Heron Watson, Lecturer on Surgery, Royal College of Surgeons; Surgeon to the Royal Infirmary and Chalmers Hospital, Edinburgh.

[The patient was a woman 60 years of age. She had a right femoral hernia, which was tense, tender to the touch, and the surface slightly reddened. It had been strangulated seventy-two hours. There were vomiting and other unpleasant symptoms.]

The condition of matters rendered an immediate recourse to operation imperative. Accordingly, having administered chloroform, I proceeded, with the assistance of Drs. Littlejohn and Bell, to operate in the usual manner. On opening the sac, a quantity of claret-coloured muddy fluid escaped, and on exposing the contents, which consisted only of bowel, and sponging its surface, we found it presented a dark-chocolate colour, with its glistening serous surface obscured by a white or rather ash-gray "bloom." The texture of the bowel was soft, and manifestly admitted of no rude handling. The probe-pointed bistoury was accordingly guided with the greatest gentleness beneath the stricture to the inner and anterior aspect of the neck of the sac, the bowel being protected by the fore and middle fingers, while the nail of the forefinger formed the director of the bistoury beneath the constricting ring. The slightest lever movement of the knife-handle made space so that the bowel became flaccid. On drawing gently upon the knuckle of intestine, it seemed adherent to the ring; but yielding to the gentle continued traction, an adhesion seemed to give way, and the knuckle of bowel came down. At the same moment, with a crack like a bubble of air bursting, a puff of fœtid gas and a gush of fluid fæculence escaped from the intestine on the level of the mouth of the sac. On washing the parts the aperture of escape was found on the side of the bowel corresponding to the external aspect of the femoral ring, and close to the mesentery. It seemed like a transverse linear cut, a little more than a quarter of an inch in length, such as a thread might have made in the serous membrane, through which the ulcerated mucous and muscular coats along the whole line of constriction were obviously exposed. Puckering together the peritoneal coat with a pair of dissecting forceps from around the small aperture, I secured it with a ligature tied with a double knot, which, while applied with sufficient firmness to prevent its slipping, was gently tightened so as to avoid further cutting by the ligature of the tender serous membrane.

After again carefully cleansing the bowel, I returned it within the abdominal cavity; the ligature, however, was left hanging out through the wound. Further, the patency of the sac was secured by stitching its divided margins to the edges of the cutaneous incision. The dressing consisted of a pad of tow supported externally by a folded towel, and retained by a spica bandage. The patient was now laid in bed, with the limb on the affected side raised in the flexed position on pillows.

A draught of 50 drops of laudanum was administered as soon as the effects of the chloroform had sufficiently passed off to admit of her swallowing; and a quarter of a grain of muriate of morphia in pill was ordered to be given repeatedly.

Within four hours all painful symptoms had subsided; the patient had also enjoyed several quiet sleeps, and taken from time to time a single spoonful of water or of milk. We desired that her food should consist of milk and beef-tea, with ice, but no solids; and even of those fluid articles of nutriment, she should have no more than a mouthful at a time.

28th February (five days after the operation). The wound has only once been dressed since *the operation*. To-day Dr. Littlejohn again visited Miss

W. with me, and we found all the symptoms of abdominal tenderness quite subdued; the pulse quiet, the tongue moist and otherwise good, and the thirst moderated. On dressing the wound I found the sac sloughing, and accordingly cut out the sutures. The ligature still hung out of the wound. There was no fæculent smell, and no purulent discharge; the fluid exuding from the surface consisting simply of fœtid serosity.

4th March (ten days after the operation). Dr. Bell remarked that some fluid fæculence had escaped upon the dressing. The ligature still, however, remained in the wound which, in the report with which he favoured me, he says, is beginning to granulate, the sloughing sac having separated.

9th March (fifteenth day after operation). No fæculent discharge to-day.

14th March (twentieth day after operation). To-day the ligature came away on the dressing. There has been no fæcal flow since last report. To have oatmeal-gruel three times a day.

21st March (twenty-seventh day since operation). To-day the bowels acted spontaneously, for the first time since the operation.

1st April. To-day the wound has soundly closed, no discharge of any kind showing upon the dressings.

Since last report the patient has not only been out of bed, but has been able to venture out of doors, and is now (21st April) perfectly restored to her usual health.

In the case I have narrated, I did not cut off the ligature close to the knot. Neither did I close the wound. In fact, I attached the divided margins of sac to the edges of the cutaneous wound, so as to maintain a patent communication with the cavity of the abdomen, and a free channel of escape for purulent or intestinal matters. The ligature I purposely left hanging out of the wound, that it might afford a guide for the fæculence, should it escape. The wound itself was dressed simply with a pad of tow, retained by a spica bandage, so that no impediment might exist to a free fæcal escape, should it come in quantity and with force, as is sometimes the case. No better commentary could be made upon the good effects of this mode of procedure, together with the careful restriction of diet to the smallest quantities of fluid nourishment, and the free administration of opiates, than to read by contrast Sir Astley's case, where the closure of the wound, the repeated administration of violent mercurial purgatives, and free bloodletting, was attended with violent fever, retention of urine, a tense and tender belly, great flatulent distention and delirium, relieved at once, when the stitches were cut out, by a copious discharge of pus from the wound.

If there be one thing more than another in the treatment of a strangulated hernia after operation, which, next to early interference, conduces to the success of the result, it is the abstinence from the employment of purgatives, and the somewhat free administration of opiates. Here the patient's bowels were not opened for nearly four weeks after the operation, and then this result was spontaneous, unless the oatmeal food can be supposed to have conduced to have procured their evacuation. Till this evacuation she had no solid food of any kind. The patient was very hungry during a considerable period of her convalescence, and grumbled somewhat at the strictly-limited dietary. By diminishing the quantity of fæculent material passing through the intestine, this meagre diet undoubtedly shortened the period during which the fæcal fistula existed, while the progress of the reparative changes were at the same time not delayed.

For the first week, Miss W. took a quarter of grain of morphia every two or three hours; during the second week she had the same quantity thrice a day; during the third week she had a pill only at bedtime; and after that period it was discontinued. To the heroic practitioner of former times, to whom the early evacuation of the bowels after the operation seemed the great object to be sought after, such non-interference may seem foolishness, and, possibly, the idea may even suggest itself that the obstructed condition of the intestines may have favored the establishment of the fæcal fistula. Were it so, the fæcal discharge would not have ceased spontaneously before the bowels were *moved, nor* would it have lasted for only five days,—a duration of flow which, with its very limited amount, points to the separation of the ligature as the source of the escape.

Would it have been a wiser method to have adopted that mentioned as Sir A. Cooper's, by Mr. Teale and Mr. Erichsen, viz., cutting off the ends of the ligature close to the knot, by which, as in the case of wound, the detached ligature effects its escape by ulceration into the bowel? I think not; for if adhesion be imperfect, and fæculent or flatal escape be established, it is surely as well that a free channel of escape be provided than risk the fatal extravasation, which a complete or even partial occlusion of the neck of the sac from any cause might entail. A painful result, after an illusory period of convalescence.

No doubt, cases have been narrated where a portion of bowel with a small ruptured or ulcerated aperture in its parietes has been returned to the abdominal cavity without employing any measures for securing even a temporary closure of the opening. Such successes are, however, no more worthy argument for the imitation of such practice than the few scattered cases where recovery in cases of unrelieved hernia has followed sphacelation of the bowel, sac, and integumentary tissues, should encourage us to neglect the ordinary operation for relief.

Practically, the adoption of this practice of applying a ligature around any small aperture in the intestinal contents of a hernial sac is not likely to be frequently repeated with success, especially in instances where the strangulation has existed for so long a period as sixty-three hours. But if Mr. Erichsen's statement is taken into account, viz., that accidental wounds of the intestinal contents of a hernia have occurred in the "practice of the best and most careful surgeons," that Lawrence, Sir A. Cooper, Jobert, and Liston, have all met with it in their practice,—then we may believe that this class of intestinal wounds may occur again, and the successful issue in this much more unfavourable condition may encourage less distinguished men, should they meet with such an untoward accident, to resort to this method of treatment, and to have a better prognosis than I should imagine their personal feelings, in the circumstances, would be likely to originate.—*Edinburgh Medical Journal, July*, 1869, *p.* 12.

61.—RESULTS OF OPERATIONS FOR THE RADICAL CURE OF INGUINAL HERNIA.

Cases under the care of JOHN D. HILL, Esq., at the Royal Free Hospital.

Occlusion of the inguinal canal is the object which is desired in every operation for the radical cure of an inguinal hernia, and however much surgeons may differ as to the *modus operandi*, this is the leading principle. In the respective contributions to this subject by Mr. John Wood, Professors Fayrer and Syme, MM. Bonnet, Watzer, and Gerdy, several most ingenious methods have been devised. It is therefore desirable, in a question of such practical importance, to record all cases which have been submitted to the curative process, in order that the kind of cases suitable for operation, and the relative merits and advantages of particular operations, may be made known.

The following notes are from Mr. Hill's case-book. The patients were severally operated upon after the methods which have been described by Mr. John Wood and M. Gerdy. The condition nine months and twelve months respectively after operation is given.

Case 1.—Henry C., aged 23 years, by occupation a labourer, was admitted into the hospital, June 8th, 1868.

History.—About three months previous to admission, while employed in lifting timber, he felt something suddenly give way in the right groin. This was followed by swelling and tenderness at the seat of injury; the latter, however, soon passed away, while the former continued to increase gradually, but always disappeared on his assuming the recumbent posture. Since the accident he had never been free from pinching pain in the bowels on attempting to lift even an ordinary weight; and at last being quite disabled, he came to the hospital. He had never worn a truss.

Present Condition.—A hernial tumour about the size of a walnut projects at the external abdominal ring, which can be reduced by gentle pressure. When the forefinger is passed into the inguinal canal, invaginating the scrotal coverings, the margin of the internal ring can be distinctly felt. This is stretched towards the mesian line, while the external ring is drawn outwards, and thus the obliquity of the canal is reduced. On measuring its capacity, the forefinger and tip of middle finger can be inserted within the external ring. The hernial sac apparently contains intestine.

Treatment and Progress.—To-day (June 12th), after the bowels had been freely relieved by a purgative, Gerdy's operation was performed in the following manner:—The patient being in the recumbent posture, the right forefinger of the operator was passed into the inguinal canal, tucking up a sufficient quantity of the scrotum to prevent any tension or dragging upon the suspensory wire when inserted. He was then requested to cough sharply, and by the impulse thus communicated the intestine was found well guarded by the finger. Next, a strong curved needle, armed with a stout silver wire, was guided along the finger, and thrust through the invaginated scrotum, conjoined tendon, and inner pillar of ring, transfixing the integument an inch above Poupart's ligament. The needle, having been disengaged, was now attached to the lower end of the wire, and again guided along the finger through the invaginated scrotum, outer pillar of ring, and integument, appearing just above Poupart's ligament. The wire was now made tense, and retained so by an assistant, whilst a coil of strapping, of the thickness of a No. 12 bougie, was attached to either end, and rolled home. A pad and spica bandage completed the operation, after which he was removed to bed, and ordered twenty minims of tincture of opium.

June 13th. Complains of pain in the course of the inguino-cutaneous nerves. Ordered twenty minims of tincture of opium every four hours.

14th. Better. Pain subsided after the second dose of opium.

15th. There is considerable thickening in every direction around the wire (lymph deposit), and slight oozing of pus from the wire holes.

19th. Thickening is much increased; removed the wire; bowels relieved.

25th. Thickening lessened; wire holes healed.

30th. Invaginated scrotum seems pretty secure; no protrusion on coughing while standing upright, and but slight impulse.

July 15th. Occlusion of the inguinal canal is now very complete. On making traction upon the scrotum, the invaginated portion is firmly held in position by adhesions.

July 24th. Discharged, but instructed to wear a light truss on resuming laborious work.

June 30th, 1869. Invaginated scrotum remains intact. He follows a light occupation (messenger), and does not wear a truss, except when called upon to lift.

Case 2.—John B., aged 17, a weakly, attenuated boy, was admitted into the hospital on the 19th of October, 1868.

History.—He has generally enjoyed pretty good health, although he was never capable of much hard work. Some time ago noticed a fulness in the left groin; and about two months previous to admission, during a sharp attack of coughing, felt something give way there. This was soon afterwards followed by a swelling, which increased on lifting or otherwise exerting himself; and he became much troubled with pain and uneasiness in the belly. Had never worn a truss.

Present Condition.—The abodominal walls are exceedingly thin, and there is a tendency to rupture an inch above the umbilicus, at the umbilicus, and in the right groin. In the left inguinal region is a hernial tumour, about the size of an egg, containing intestine. This can be easily returned. The obliquity of the canal is so considerably reduced that the inner half of the internal ring corresponds to the outer half of the external ring; and thus the hernia has become almost direct. This appears to arise rather from the yielding nature of the structures than from the application of any extraordinary amount of force. The ring margins are very thin and elastic, and the boundaries of the inguinal canal easily defined.

Treatment and Progress.—The bowels having been previously relieved by an aperient, chloroform was administered on October 28th, and Mr. John Wood's operation performed as follows:—An incision about an inch in extent was carried through the skin of the scrotum over the fundus of the sac. The skin was next separated from the fascia, and the invagination of the latter carefully effected. A needle armed with strong silk was then passed through the invaginated fascia, conjoined tendon, and internal pillar of the ring: next through the fascia and external pillar; and lastly, through the fascia, triangular aponeurosis, and internal pillar. Thus a loop and two ends were seen appearing externally at one aperture in the skin—the loop passing through the external, the ends through the internal pillar of the ring. The operation was completed by threading the lower end through the loop; and after drawing together the margin of the ring, so as to hug the cord, the ends were tied together over a coil of strapping; and, lastly, a pad and spica bandage were applied.

October 29th. Complains of pain in the course of the inguino-cutaneous nerves. Ordered twenty minims of tincture of opium.

November 1st. There is some thickening around the ligature, and slight oozing of pus along it; is now free from all pain.

3rd. Thickening is increased; wound is nearly healed.

5th. Wound is healed; ligature removed.

14th. While standing erect, no preternatural impulse is felt on coughing. Ordered to wear a pad and bandage.

20th. Cicatrix is firm, and all thickening is absorbed.

28th. Discharged sound.

December 20th. Is now able to follow his employment without any support. Is, however, instructed to wear a light truss when lifting or doing heavy work.

On July 17th, 1869 (nine months after the operation), he attended at the hospital. There had been no return of the rupture; indeed, Mr. Hill says the inguinal canal seemed to offer more resistance on coughing than the muscular walls generally. The patient wears an elastic abdominal support, and occasionally (*i. e.*) before lifting weights a light truss.

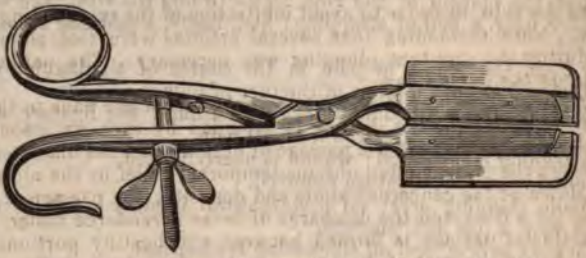
In these cases Mr. Hill carefully determined the following points previous to the operation: 1. The age, occupation, habits, and state of health of the patient. 2. The variety, condition, situation, and size of the hernial protrusion, with the course and dimensions of the canal. 3. Its cause, whether congenital, gradual, or sudden. 4. The amount of care which the patient could ensure after the operation. Both patients were young, healthy, and temperate, and they had a fair prospect before them as regards suitable employment for the future. In case 1 the simpler operation was selected because of the smaller size of the hernia, its recent date, and sudden cause; while in case 2 the more complicated operation was chosen because of the larger size of the tumour, the dilatability of the inguinal canal, and the more direct course of the hernia.—*Lancet, Aug.* 7, 1869, *p.* 198.

62.—DESCRIPTION OF AN IMPROVED HEMORRHOIDAL CLAMP.

By Henry Smith, Esq., Assistant-Surgeon to King's College Hospital.

Some twelve months since I introduced to the notice of the profession, through the pages of the Lancet, (see *Retrospect*, vols. lviii. pp. 155, 157, and lvi., p. 194), a modification of the hemorrhoidal clamp, consisting of the addition of a plate of ivory to the backs of the metal blades of the instrument. At that period I had tried the clamp so modified in a sufficient number of cases to lead me to see that this addition of the non-conductor of heat was a very good improvement. The further experience of a large number of cases, both of hemorrhoids and prolapsus, has convinced me that the clamp should never be constructed without the ivory plates; for in those cases where it is not desirable to exhibit chloroform, or where patients will not inhale it, if one of these instruments be used, the actual cautery may be applied so that it is impossible for the patient to know what is being done. And the object of the communication is to show how this has been effected.

It will be remembered that when I first employed the ivory lining it was made simply to cover the lower surface and the sides of the blades of the clamp; but some little time since I requested Mr. Matthews to extend the ivory beyond the limits of the clamp, on either side and at the upper extremity of the blades, for half an inch. (See Fig.) By this means the non-conducting surface is very much increased, and unless the cautery is applied very carelessly, or kept in contact with the instrument an inordinate time, it is impossible, as I have above stated, for the patient to know when the hot iron is being used.



As a somewhat amusing illustration of this fact I may mention that recently I was operating on a very severe case of internal hemorrhoids, and the patient had beforehand expressed great dread of the cautery; but I had assured him that in all probability he would not know when I applied it. After I had used it very freely, and finished the operation, my assistant went to the fireplace to take out the cauteries. The patient, catching sight of these formidable tools, immediately began to exclaim vehemently that I was going to apply the iron. His astonishment and gratification may be imagined when I told him that the process was finished. This little incident by itself shows the value of the ivory plates.

Of course, if chloroform be used it is not necessary to employ the clamp with the ivory blades, although I would recommend that the instrument should always be constructed with this addition.—*Lancet, August* 7, 1869, *p.* 197.

63.—ON CANCER OF THE RECTUM.

By Holmes Coote, Esq., Surgeon to St. Bartholomew's Hospital.

The rectum is not infrequently the seat of carcinoma, and as in other parts of the body, so in this, either soft cancerous growths may spring from the mucous membrane, or cancerous matter may be infiltrated among the tissues of the bowel, producing a general induration and thickening, accompanied by a narrowing of that part of the tube. We have in the museum a specimen in which distinct masses of soft, spongy, medullary substance have grown from the mucous membrane for about three inches above the anus; another in which, at about a similar distance from the anus, the greater part of the circumference of the intestine is occupied by a firm medullary tumour growing from beneath its mucous membrane. The mucous membrane is healthy. The tissues around that part of the rectum which is occupied by the morbid structure are thickened and condensed. The lymphatic glands behind the rectum are enlarged, and filled by a substance similar to that of which the tumour is composed. The patient, from whom this specimen was taken, was a woman of forty years, who died extremely emaciated, with medullary tumours in the liver and other parts, and who had made no complaint leading to a suspicion of disease of the rectum.

Infiltrated cancer, sometimes called "fibrous," approaches in character scirrhus of the breast. It may occupy at its commencement only part of the circumference of the intestine, where, its progress being slow, and a compensating dilatation being allowed by the unaffected portion of the tube, it may exist for a considerable time without interfering with the action of the bowels; nevertheless it sooner or later involves the neighbouring structures—the bladder or the vagina may become adherent, and similarly affected, or the rectum become fixed to some part of the pelvis.

A case of melanotic cancer has been recorded by Demarquay (*Journ. de Med. et de Chir.*, vol. xxxii., part 9). A tumour, the size of a hen's egg, protruded from the back of the rectum, above the internal sphincter. Demarquay detached the sphincter from the coccyx, and cut off the back of the rectum with the tumour, which he pulled down with a forceps. The bowel was then stitched to the skin, in order to avoid infiltration of the surrounding tissues by the fæces. Notwithstanding that several arteries were tied, so much blood was lost during the day that plugging was necessary. The patient died of exhaustion on the second day.

The usual seat of cancer is about two inches from the anus to the sigmoid flexure of the colon, and the disease is attended by such an amount of progressive narrowing, that often a passage of only a few lines diameter remains. In these cases the patient often obtains temporary relief by the ulceration and breaking down of the cancerous knots and deposits; the passage of the bowel is widened for a time, and the discharge of fæces is rendered easier. In other cases an artificial passage is formed between the healthy portions of bowel above and below the seat of disease—a tortuous, perforated, fibrous passage results, which in some degree obviates the distressing symptoms which would result from complete obstruction.

But in all cases the disease has a fatal termination. The patient may die from inflammation of the distended bowel, or general peritonitis; or from progressive marasmus; from a high state of tympanitis, interfering with respiration; there may be symptoms of fæcal vomiting, gradually increasing in severity.

It is said that inflammation of the bowel above the seat of stricture ensues as a consequence of pressure of the impacted fæces, and blocking of the blood-vessels. It involves all the tunics, and is characterised by enormous hyperæmia of all the vessels, and by a deep blue, or black hue of the gut itself. Both the mucous membrane, and the sub-mucous tissues are infiltrated with the usual products of exudation, and often so as to become discoloured, soft, and friable masses. Peritonitis commences here, and spreads over the entire membrane.

The treatment must of necessity be only palliative; but we may soothe that which we cannot cure. A tube introduced through the stricture, by means of which the bowel may be washed out with warm water, gives an amount of ease to the patient which will be better understood when the effect of the mechanical impaction of the hardened fæces is brought to mind. With this warm water some preparation of opium may be mixed; or the same drug may be used in the form of a suppository. In some stages of the disease a bougie, carefully introduced, has relieved symptoms; and in all cases the proper regulation of diet is an essential indication.

Discharge from the rectum is often very offensive in odour, during the stage of carcinomatous ulceration. The employment of Condy's fluid, and of other disinfectants is here strongly indicated.

The idea that cancer of the rectum is in any stage a mere local affection is no longer entertained by any well-educated surgeon.—*Medical Press and Cirlar, May* 19, 1869, *p.* 409.

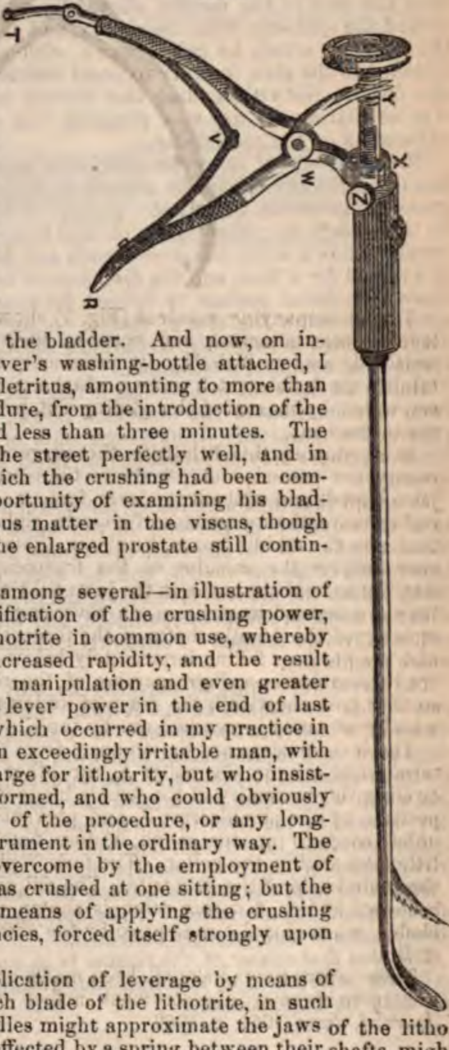
ORGANS OF URINE AND GENERATION.

64.—LITHOTRITY, WITH A NEW LEVER LITHOTRITE.

By Dr. PATRICK HERON WATSON, Lecturer on Surgery, Surgeon to the Royal Infirmary and Chalmers Hospital.

[A year before the operation which is the subject of the following paper, Dr. Watson had crushed a calculus fully the size of a pigeon's egg in the patient's bladder. His symptoms were so much relieved that he would not permit any further interference at that time. The patient was 80 years of age.]

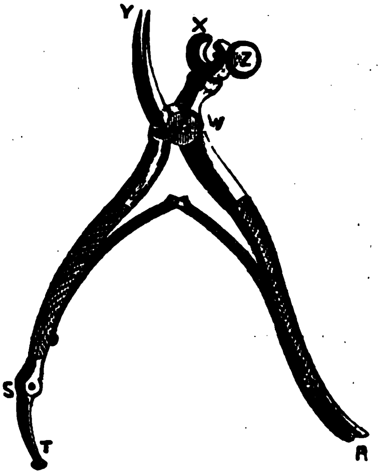
Fig. 1.



On examining the bladder with a converted lithotrite of Messrs. Weiss's pattern, I at once seized a calculus behind the prostate, which measured eight lines upon the scale, and, on adjusting the lever forceps to the shaft of the instrument, proceeded to crush. After opening and closing the handles of the forceps some eight or ten times in rapid succession, I found that nothing farther remained in the bladder to obstruct the free play of the jaws of the lithotrite. I accordingly closed the forceps, and removed the instrument from the bladder. And now, on introducing a catheter, with a Clover's washing-bottle attached, I removed a quantity of uric acid detritus, amounting to more than two drachms. The whole procedure, from the introduction of the lithotrite to its removal, occupied less than three minutes. The next day I met this patient in the street perfectly well, and in great glee at the facility with which the crushing had been completed. I have since had an opportunity of examining his bladder, and find no trace of calculous matter in the viscus, though symptoms of irritation due to the enlarged prostate still continues to exist.

I have detailed this case—one among several—in illustration of the employment of a new modification of the crushing power, capable of application to any lithotrite in common use, whereby it can be worked with greatly-increased rapidity, and the result attained with equal delicacy of manipulation and even greater power. I was led to invent this lever power in the end of last year, in consequence of a case which occurred in my practice in the autumn. The patient was an exceedingly irritable man, with a uric-acid calculus rather two large for lithotrity, but who insisted that lithotrity should be performed, and who could obviously ill bear any frequent repetitions of the procedure, or any long-continued application of the instrument in the ordinary way. The difficulty was in his instance overcome by the employment of chloroform, whereby the stone was crushed at one sitting; but the importance of some more rapid means of applying the crushing power, as suited to such exigencies, forced itself strongly upon my mind.

I accordingly devised the application of leverage by means of moveable forceps, adapted to each blade of the lithotrite, in such wise that the closing of the handles might approximate the jaws of the lithotrite, and the opening of them, effected by a spring between their shafts, might cause the jaws to gape. The alternate movement of the jaw thus came to resemble a chewing motion, by means of which I found fragments might be safely reduced to detritus with far greater rapidity than by any other movement. I also found that the movement was quite as steady and quite as powerful as that effected by means of the screw.



The accompanying woodcut (Fig. 1) shows the entire instrument with the lever-forceps attached, and open to their full gape. The lithotrite is that usually known as Weiss's. Its peculiarity consists in the fluted handle containing the female catch screws, which are made to project and seize the male screw rod by means of the gliding slot projecting from the upper surface of the instrument.

In employing this lithotrite the surgeon stands on the right side of the recumbent patient, and introduces the instrument into the bladder with the jaws closed, and without the lever-forceps. Rotating the instrument through rather more than a quarter of a circle, right or left, after having opened the blades in the middle space, he closes them gently, and in all probability at once secures the calculus or the fragment. He now closes the slot so as steadily to hold the stone in the jaws till the lever-forceps are applied. When they are secured in position, on reversing the slot, the alternate closing and opening of the handle-shafts of the forceps crushes fragment after fragment; and the portions falling immediately below the jaws as the larger fragments are broken down, a slight increase of the rotation of the lithotrite brings the smaller portions within the grasp of its jaws, till nothing but a detritus is left, which can easily be washed out by the Clover apparatus.

The lever-forceps are shown apart from the lithotrite in Fig. 2. One blade terminates in a circular collar X, the other in the fork Y. The collar X encircling the extremity of the female blade of the lithotrite, is held steadily in position by the pinch-screw Z, and prevents the slipping of the collar, while, unless screwed up too much, it does not interfere with the rotation of the lithotrite within the collar. The fork Y plays upon the thinned portion of the male blade of the lithotrite. The elliptical spring which opens the blades is shown at V. A spring-catch is shown open at S T (Fig. 2), by which the blades, when closed, are kept so by the extremity T holding between the fork at R.

These instruments have all been made or converted for me by Mr. Young, the eminent surgical-instrument maker of this city.—*Edinburgh Medical Journal*, *June*, 1869, *p.* 1069.

65.—SOME OBSERVATIONS ON THE OPERATIONS FOR EXTRACTION OF STONE PERFORMED AT THE LEICESTER INFIRMARY; CONTAINING A STATISTICAL ACCOUNT OF THE LATERAL AND MEDIAN METHODS.

By THOMAS W. BENFIELD, Esq., Senior Surgeon to the Infirmary.

Sir H. Thompson gives a table of 1827 cases of lateral lithotomy, with 229 deaths, or 1 in 7·977—nearly 1 in 8; and I am gratified to find that the Leicester Infirmary ranks second only to Cambridge. But I will mention all the hospitals with their results.

It is but just, however, to say that such a table is incomplete without more detailed statistics as to age, &c.

Mr. Martineau, of Norwich, is reported to have operated on 84 cases, with only 2 deaths (Sir H. Thompson); and I am informed by my friend Mr. Fullagar that his operation was by the lateral method, with curved staff and knife, and by dilatation of the prostate with the blunt gorget.

	Cases.		Deaths.		
Norwich (Crosse)	669	....	91,	or about	1 in 7¼
Since that time	124	....	15	"	1 in 8¼
Oxford	110	....	14	"	1 in 8
Leicester	90	....	8	"	1 in 11
Leeds	29	....	4	"	1 in 7¼
Birmingham	102	....	10	"	1 in 10
Guy's Hospital	230	....	33	"	1 in 7
St. Thomas's Hospital	200	....	29	"	1 in 7
University College Hospital	90	....	12	"	1 in 7½
Cambridge	183	....	13	"	1 in 14
Total	1827		229		

Mr. Allarton records 139 cases of median lithotomy, at all ages, with 13 deaths (Sir H. Thompson), or 1 in $10\frac{2}{13}$.

"De Borsa declares that of 100 cases operated upon by him and Manzoni, by the latter's median method, only one died, and that from causes irrespective of the operation" (Mr. Allarton).

The operations performed at the Leicester Infirmary by the present surgical staff, and not included in Sir Henry Thompson's table, are as follows:—Median operations, 57, with 3 deaths, or 1 in 19; of these, 9 were adults, or above 17 years of age: the deaths were two adults and one juvenile. Lateral operations 12, of which 11 were cured, and 1 adult died, aged 67. The grand total is 69, with 4 deaths, or 1 in 17. The result is, in median operations, 1 death in 19; in lateral operations, 1 death in 12. And comparing these with the statistics of the Leicester Infirmary given in Sir Henry Thompson's table, all of which operations were lateral, it stands as 1 to 11 in that table, and 1 to 17 in our mixed operations subsequently performed; but in taking our median alone, as 1 to 19 against 1 to 11 lateral.

To economise time, I will not enter into further comparison of the two methods, but rather refer you to my statement, because I believe that the Italian and its modification in the median, or Allarton's method, have not had the due consideration by the profession to which they are entitled.

I do not regret to say that I have had very few opportunities of judging whether or not the prostate gland has been lacerated or overstretched in the extraction of stones by the median operation. I can only say that I have never had any ocular demonstration of that fact, nor have I met with any statement to that effect as proved by post-mortem examination; but this is a question which must be decided by experience.

When I consider the structures divided in the median operation, as compared with those divided in the lateral, and at the same time weigh the results of our smaller number of operations with the more generally adopted lateral, I *think I have reason, in* properly selected cases, to continue its use, and to bring it under notice as worthy consideration. In my own two cases which died the stones were not large, the extraction of them was easy, and there was nothing to lacerate the prostate; and in Mr. Marriott's single median death, abscess and peritonitis occurring suddenly at the end of three weeks, give but opposing evidence to the frequency of such a result.

Next, in respect to hemorrhage I must say a few words. In one case only, out of 25 median operations, have I had occasion to use the lithotomy tube or to ligature; but in one lateral out of 9 I was obliged to secure two vessels on account of sharp bleeding. Now I think it is but just and honourable to say why, in my opinion, the hemorrhage followed by death occurred in that median operation; and it was this: the perineum was deep, and I failed at first to hit the groove in the staff, and the blade of the knife passed by the side and beyond the urethra, probably wounding the artery of the bulb, or some artery abnormally distributed. In no other case have I encountered primary hemorrhage which was not easily controlled, or in which I had occasion to ligature or to use the tube.

On referring to Mr. Marriott's notes, which he has kindly given me, I find that he had occasion to use the tube twice in his *median* operations, and both recovered; and in three cases there was smart hemorrhage, requiring ligatures; but in *two* out of his *three lateral operations* there was *severe hemorrhage*, requiring the plug, and one of these patients died from pyæmia in seven days, and in the third case there was free venous hemorrhage. I have once had secondary hemorrhage in a child, which occurred on the tenth and eleventh days after the median operation, and which was so severe as almost to threaten death. This was controlled by ice applied to the perineum, and by the internal administration of gallic acid, and the child recovered.

Mr. Thomas Smith of St. Bartholomew's Hospital, in a paper lately published in the British Medical Journal, quotes 20 lateral and one median, all in children, in all of which he introduced the lithotomy tube; and he recommends its use in all cases as a preventive of hemorrhage. But, from my own experience, I think this unnecessary; and, if unnecessary, objectionable. Nevertheless, all his cases were successful.

In two or three cases I have observed, in my own practice, orchitis of one or both testicles following the median method, and which I do not recollect to have seen after the lateral operations. These somewhat retarded the recovery, but occasioned no further inconvenience.

In two cases, one lateral, the other median—liquid fæces passed per urethram; and in one of them, the lateral, flatus also escaped by the same passage. In the median it occurred in a boy 12 years old on the thirteenth day after the operation; in which case the stone was rough and large, and composed of oxalate of lime. In the lateral case, which was a complicated operation on account of the extraction of two large phosphatic calculi, combined with stricture of the urethra, flatus passed by the urethra at the end of three weeks, accompanied by liquid fæces. But both of these recovered completely without further surgical interference. In neither of these was the rectum wounded by the knife; but, as I infer, from sloughing occurring after the operation. In this latter case the man, aged 32, had been the subject of stricture for several years; and although I had dilated the stricture gradually for seven days prior to the operation, I was unable to introduce the curved laterally-grooved staff, and, whilst on the table, I first opened the stricture by Thompson's dilator, and then readily passed Aston Key's straight staff. The first stone, for there were two, was removed after prolonged careful extraction; but I was compelled to crush the second by the lithotrite, as it could not be extracted without using undue violence. And here I may remark, that this latter proceeding is one which Sir H. Thompson condemns as dangerous in a bladder entirely empty of urine; but with the exception of the sloughing before mentioned, and which in my opinion was entirely independent of the use of the lithotrite, no untoward symptoms followed, and the man recovered.

I ought to add, that upwards of thirty operations were performed by my late colleagues, Messrs. Paget and Macaulay, since the year 1851; but

I have been unable to obtain satisfactory details as to the method adopted, and therefore they are not included in my table.—*Lancet, July* 31, 1869, *p.* 156.

66.—ON EXTERNAL PERINEAL URETHROTOMY.

By Dr. J. W. S. Gouley, Professor of Clinical Surgery, and of Genito-Urinary Diseases in the University of New York, Surgeon to Bellevue Hospital, &c.

After numerous trials of the various modes of external urethrotomy, and after a careful analysis of their defects and dangers, I have sought to devise a method by which the risk might be reduced to a minimum, and the steps of the operation rendered easy, safe, and certain. It is the result of this endeavour which I now wish to submit to the profession.

The operation is as follows: the perineum having been shaved, the patient is etherised. The urethra is explored with a flexible bulbous bougie, of proper size, to ascertain the exact seat of the obstruction. The canal is then filled with olive-oil, and a capillary probe-pointed whalebone bougie is introduced into the urethra. If its point becomes engaged in a lacuna, it is withdrawn a little, and again carried onward with a rotary movement. If it enters a false passage, it is retained *in situ* by the left hand, while another is passed by its side. If this second guide makes its way into the false passage, it is to be treated precisely as was the first, and the operation repeated till one guide can be made to pass the obstruction and enter the bladder. Sometimes five or six guides are thus caught before the false passage is filled up and the natural route opened. I have frequently succeeded in thus reaching the bladder in very narrow strictures, supposed to have been impassable, and after all other means had failed. As soon as a guide enters the bladder—which may be known by the ease with which the instrument may be moved in and out—the other guides are withdrawn. The next step is to introduce a No. 8 grooved metallic catheter, with a quarter of an inch of its extremity bridged over so as to convert the groove into a canal, the bridged portion itself being also grooved. Its introduction is accomplished by passing through the canal the free end of the retained guide, then holding the latter steadily between the thumb and index finger of the left hand, and pushing the catheter-staff gently into the urethra, until its point comes in contact with the face of the stricture. The staff and guide are then kept in position by an assistant, who at the same time supports the scrotum. The patient is placed in the lithotomy position, and held by two assistants, or better, by the aid of Pritchard's anklets and wristlets.

The surgeon, seated on a low chair, first makes a digital exploration per rectum, to ascertain, as far as practicable, the condition of the membranous and prostatic divisions of the urethra; then he makes a free incision in the median line of the perineum, extending from the base of the scrotum to within half an inch of the margin of the anus, involving only the skin and superficial fascia. The external incision usually recommended in this operation, is from one inch to one inch and a half in length, but I believe that free external incisions here, as in lithotomy, are of decided advantage, as they expose fairly to view the subjacent parts, and tend to prevent subsequent infiltration of urine in the superficial layers. A few well-directed cuts have brought into view the urethra, the operator, with his finger-nail, feels for the groove on the bridged portion of the staff, and opens the canal upon this groove, longitudinally in the median line, exposing to sight the instrument. A loop of silk is then passed through each edge of the incised urethra, close to the face of the stricture, and held by the assistant in charge of the corresponding limb. This excellent contrivance, suggested and employed many years ago by Mr. Avery, of Charing-Cross Hospital, London, is of the greatest service, and ought not to be omitted, as it constantly keeps in view the median line. When the urethra is opened, and the loops are secured, the catheter is withdrawn a little, so as to *bring into* view the black guide; then the stricture, with about half an inch *of the uncontracted canal* behind it, is divided. This, I think, is best accomplished by means of the small knife, which I have modified from Weber's instrument for slitting the canaliculus lachrymalis. It is a very narrow, beaked, straight bistoury, about the size of a small probe, and is made to enter the stricture alongside of the guide, as if it were a probe, and the incision is done by directing the edge downward. The last step is to pass the catheter-staff, guided by the whalebone bougie, into the bladder; but should it be arrested in its course, the knife must be reintroduced, and the incision extended farther back. The operation is thus completed without unnecessary delay, the bladder is entered with the greatest gentleness; and, by the free flow of urine through the catheter, the surgeon is certain that the instrument has gone in the right direction, that he has divided the stricture thoroughly, and that he has not simply enlarged a false passage.

This method is, I think, particularly well adapted to cases where the urethra is deep-seated, or where there is great induration or tumefaction of the perineum, from old standing trouble, or from extravasation of urine. The presence, in the bladder, of the whalebone guide, so firm though so delicate; the assured position of the catheter-staff, compelled to follow the guide which lies in its terminal canal; the light thrown into the wound through the agency of the loops of silk, which constantly indicate the situation of the urethra, and of the median line; the ease and certainty with which the catheter-staff—still sliding over the guide—is made to enter the bladder after the incision; all seem to me to contribute to the success of the operation, in difficult cases especially, more than any other means which I have employed. Where the initial introduction of the whalebone guide is impossible, it may be passed through the perineal wound into the bladder, and the stricture divided as before; or Arnott's grooved probe may be used as a guide for the incision, and the whalebone bougie then passed along its groove. In either case, with the guide in the bladder after the incision, the point of the catheter-staff may be protruded from the wound, the free end of the guide carried through the terminal canal, and the bladder entered as before described.

When the state of the patient is such that the operation may be safely postponed, which can almost always be done when there is not impassable stricture with retention or extravasation of urine, I am in the habit of adopting, for a week or so, the following course of preparatory treatment:

The patient is confined, as far as possible, to the recumbent posture, and is directed to take a warm hip-bath every night. A diluent drink is to be freely used, ten drops of the tincture of chloride of iron taken three times daily, and five grains of quinine at bed-time. A suppository, containing one grain of the aqueous extract of opium, and half a grain of the extract of belladonna, is introduced into the rectum every night to allay spasm and procure sleep. Finally, the bowels are emptied, by the aid of a dose of oil, the evening before the operation. On the morning of the operation, an enema is given to completely free the rectum from fæces.

After the operation is concluded, and before the patient has fairly recovered from the effects of the anæsthesia, ten grains of quinine, with a quarter of a grain of morphia, are administered; and as soon as the nausea produced by the anæsthetic has subsided, a broth is given. On the following day, the diluent and iron are resumed, with the addition of three grains of quinine three times daily, and continued for two or three weeks. After four or five days, a warm hip-bath should be taken daily.

I believe that such a course of treatment is likely to prevent the occurrence of many of the unpleasant symptoms which sometimes follow the operation. The surgical after-treatment is at first similar to that observed in lithotomy. The scrotum is supported by a suspensory bandage, to guard against any possibility of infiltration of urine into its connective tissue, and the patient is kept on his back. Generally, the first time he urinates, most of the urine flows through the perineal wound; but afterwards, for forty-eight hours, all the urine escapes through the proper channel, from swelling and contact of the lips of the wound; as soon as the swelling subsides, and suppuration is established, a certain quantity of urine again passes through the perineal wound, but no harm ensues.

In the great majority of my operations, both of internal and of external urethrotomy, I have not followed the usual practice of tying in a catheter.

The wound is not disturbed, and no instrument is passed into the bladder until the second day, and then a full-sized, highly-polished, conical steel sound, of proper curve, is introduced, and the introduction repeated every third day, until the wound has healed—which takes place generally within four weeks—and then the patient is taught to pass the instrument for himself, and is advised to continue its use indefinitely.—*New York Medical Journal, Aug.*, 1869, *p.* 450.

67.—CASE OF TRAUMATIC STRICTURE.

By Christopher Heath, Esq., Assistant-Surgeon to University College Hospital.

The method of treating stricture of the urethra by rapid dilatation or splitting, introduced by Mr. Holt, has been received with considerable favour in professional circles as regards the ordinary forms of stricture, but I have been surprised to find that many surgeons entertain a doubt whether strictures of a traumatic origin are equally amenable to this form of treatment. Having treated several cases of bad traumatic stricture, complicated with fistula, by this method with the greatest success, I venture to bring before the meeting the last of the series as a fair specimen.

All surgeons are aware of the serious nature of strictures resulting from rupture of the urethra, from falls on the perineum, even if the primary dangers connected with retention and extravasation of urine be safely surmounted. These strictures are extremely dense; in cases of long standing, even cartilaginous in structure, and they, therefore, owing to the non-vascular condition of the parts, are the most satisfactory cases to submit to urethrotomy, whether external or internal. Both these operations, however, possess dangers of their own into which I need not enter now; but I must for a moment institute a comparison between internal division and Mr. Holt's method, in order to mention a fact which has been but recently ascertained, In a patient who was the subject of stricture, and who died of fever before being submitted to operation, I assisted Mr. Holt to split the stricture in the post mortem room, and to examine the preparation, which showed a longitudinal rent in the stricture, as may be seen in the illustration to Mr. Holt's work. It was naturally concluded that a similar split occurred in the living subject, though neither Dr. Cruise, of Dublin, nor myself had been able to discover anything of the kind with the endoscope in patients examined a day or two after the operation. Recently, however, two different surgeons have had the opportunity of examining the urethras of patients upon whom they had operated shortly before, and they found that the mucous membrane was entire, and that merely the indurated submucous tissue or stricture proper was torn. This may not, of course, be the case in every instance; but it is certain that in many Holt's dilator does not tear the mucous membrane, and hence the very slight symptoms produced. In internal division, on the contrary, the mucous membrane must necessarily be incised; and the depth to which the submucous tissue is divided will depend upon the extent of knife protruded and not upon the full size of the urethra being attained.

In cases of traumatic stricture, complicated with fistula, my experience is that, if the urethra is restored to its natural calibre, the fistulæ close spontaneously; but it is possible that severe cases might require a touch with a hot wire to make them heal up.

Case.—Mr. W. H., aged 18, a midshipman, in June, 1867, fell off the wharf at Trincomalee, astride the gunwale of his boat, and ruptured his urethra. He was landed and put under the care of a naval surgeon, who unfortunately died of an apoplectic fit the same day. Being consequently neglected, he got extravasation of urine, and his life was only saved by the arrival, on the following day, of a military surgeon, who made free incisions into the distended scrotum. He eventually recovered, with a fistula of considerable size behind the scrotum. He was taught to pass a No. 8 silver catheter for himself, and continued to do so for a couple of months; but then, being on active duty, unfortunately discontinued the practice.

The patient came to me on May 14th, 1868, in good general health. There was a minute fistulous opening behind the scrotum, from which pus exuded, and considerable thickening about the urethra in the neighbourhood. He passed water in a very small and twisted stream, which was occasionally forked. The urethra was so sensitive that he could not bear me to pass an instrument, and could not pass a No. 8 silver catheter for himself.

On the following day, under the influence of chloroform, I succeeded in getting No. 4 silver catheter through a tight stricture and then introduced the dilator and split up the stricture to the full size, passing No. 11. The patient passed a little bloody water three hours after the operation, and nearly clear water in the evening. He had a good night without any sleeping draught.

The day after the operation, he was a little feverish, and had a slight rigor; and finding that he had had jungle fever in India, I put him on quinine, in two-grain doses, and he had no further trouble. He passed water quite comfortably.

On the third day after the operation, I passed a No. 10 silver catheter easily, and he went out for a walk. The day following Nos. 11 and 12 were passed; and on the fifth day he passed No. 12 bougie olivaire with ease. The advantage of the olivary bougie over the ordinary one is that it is slightly conical, and also that the bulb at its extremity enables it to pass readily along the urethra without catching in the wall. I have found them most convenient after Holt's operation.

My patient continued to pass No. 12 for himself to the end of the week, and then returned to the country. A fortnight afterwards I heard from him that he was quite well and able to pass his instrument satisfactorily, and that the fistula had closed.—*British Medical Journal, July* 17, 1869, *p.* 55.

68.—ON A CASE OF STRICTURE, WITH ABSCESS IN PERINEO.

By John Adams, Esq., Surgeon to the London Hospital.

[The case to which attention was directed in the following clinical lecture, was one of abscess in the perineum arising from stricture. Such abscesses, however, often arise where there has been no actual retention, and they probably occur in the following manner.]

A patient is the subject of a bad stricture, which he neglects. Of course the urine is forcibly driven through the urethra by the muscular coat of the bladder, which is greatly hypertrophied. This is attended with a dilatation of the urethra just behind the stricture, and this dilated portion giving way, a small quantity of urine escapes, and abscess is the consequence. Or it may be that ulceration of the urethra occurs as a consequence of inflammation, and thus a small abscess being formed, this communicates of necessity with the urethra. Under these circumstances the urine is forced more and more into the perineum, and thus distends this part, and makes its way in that direction, where there is least resistance. Thus, your anatomy shows you that the *deep layer of the superficial fascia* adheres with such tenacity to the rami of the ischia and pubes as to prevent the urine from passing down the thighs. It does not pass around the anus, because the same layer of fascia unites with the anterior layer of the deep perineal fascia. The urine, therefore, passes forwards into the scrotum and penis, and occasionally as high as the hypogastric region of the abdomen. The treatment of such a case is well known to you. A free and early incision affords the only chance of relief to the patient; and if this is neglected, the scrotum and skin of the penis will slough, and death may occur. There must be no hesitation in this case, no dissection of the parts to reach the extravasation gradually. No! You must at once thrust a pointed scalpel into the perineum, and give exit to the fluid, whether pus or urine, or both. I regret to say that such a line of practice is often neglected; and a very considerable share of a surgeon's practice consists in the treatment of such cases, possibly altogether misunderstood.

In cases of extravasation of urine occurring with abscess, it is very proper to pass a catheter, and a small elastic catheter is the instrument appropriate to such cases. But this often cannot be passed into the bladder; nevertheless, the urine will now escape by your opening, and you will possibly get a fistula in perineo, which you will treat *secundum artem;* or the perineum may entirely close up, and even the stricture may for a time be altogether lost sight of. But you ought not to allow your patient to lull himself into a state of fancied security. *Once a stricture always a stricture* is an axiom which ought to be always in the surgeon's mind, and which he ought to impress upon his patient.

The case before us is one of great interest, and aptly illustrates the early progress of cases I have alluded to; and is one where all the mischief I have described as the result of ulceration of the urethra and abscess has been prevented. It is plainly this:—The man came to the hospital with retention of urine, and the house-surgeon relieved him with a small catheter. The instrument was tied in, and was replaced in a few days by a larger catheter. In the progress of the case, however, an attack of inflammation supervened, accompanied with fever, and a tense swelling occurred in the perineum. The swelling extended upwards as far as the root of the penis, and the anterior part of the scrotum, where it joins the skin of the penis, was also swollen and tense. The urine had been freely passed with pain, and a sense of scalding. I passed a *small elastic catheter;* and, when it reached the swelling, some flocculi of inspissated pus escaped, mixed with blood. I still continued to push forward the catheter, which readily entered the bladder, and I drew off the remaining urine. But I did not stop here; I freely thrust a pointed scalpel into the tense perineum, and some healthy pus (if any pus can be said to be healthy) escaped. I tied the catheter in; and the house-surgeon has ever since attended to the case. The perineum is closing up, no urine having escaped through the wound. Had I acted differently, the urine must have become extravasated, and the usual category of symptoms would have succeeded. The catheter is changed about every third day, and there is no difficulty in passing one gradually increased in size. Elastic catheters are best adapted for cases like these; they find their own way if used with little force, and are readily insinuated through the urethra, rendered devious and irregular by the projection of abscesses and by ulceration.

I will now direct your attention to a class of cases by no means unfrequent, and which will exemplify what may be termed the early stage of the disease now under consideration, but in which retention of urine, ulceration of the urethra, and abscess in perineo may be prevented by suitable treatment. I will illustrate this subject by a case, and such cases are very common.

I was requested to see a gentleman who had retention of urine, the result of stricture in front of the bulb of the urethra. Ulceration had no doubt occurred, and abscess had formed just in front of the scrotum. I opened this, and passed an elastic catheter and tied it in; he soon got well. I lost sight of him for some years, when he sent for me in consequence of a swelling in the same situation, and great swelling of the scrotum, with pain and difficulty in passing his urine, without absolute retention. I did not doubt that ulceration of the urethra and abscess were about to ensue as before, but I thought I might anticipate, or rather prevent this, by the introduction of a catheter. I therefore passed a small elastic instrument into the bladder, and tied it in, and directed the patient to remove the stylet and draw his water off through the catheter three or four times daily. In three days I passed a larger instrument, and tied it in, still giving him the same direction as to the drawing off his urine. I changed the catheter again from time to time, with similar directions to the patient, and after three or four weeks the swelling had entirely disappeared, and he was so far cured—that is, he could pass his urine so well that he only came to me at long intervals, and after a few months ceased altogether to attend. You may ask, Was this patient cured? No; but he thought he was, and thought he knew better than his surgeon, for I told him that he ought to consider himself always the subject of stricture, *and advised him to* have a catheter passed occasionally; but very few patients will do this, and this gentleman is now under my care with a bad lengthened stricture, which I relieve by passing occasionally a catgut bougie. I could mention many cases of this description, and I dare say they very often occur to surgeons; but I would give you this advice: always use a small elastic catheter in such cases, and do not be too solicitous to pass a large instrument. Much error exists on this subject. One is apt to think that the larger the instrument the greater the chance of cure. I do not think so; indeed, I am sure that in the cases now under consideration the reverse holds good, and that moderately sized instruments are more suitable to the generality of urethras. I cannot assure you that the pathology of such cases, as I have described it, is in all cases the same. I suspect in some there is very trifling ulceration of the urethra, probably commencing in inflammation of a lacuna; but I can scarcely believe that abscess, however small, invariably accompanies this, or that any extravasation of urine happens, because there is no evidence of one or the other, and the swelling wholly subsides, without any escape of pus or urine, so far as I can judge; though I may be wrong. But wherever in a tense swelling you can distinguish fluctuation by careful manipulation, it is certainly your duty to puncture the swelling, as you may be quite certain that an abscess has formed, and that the matter must be allowed to escape. If, however, you allow your patient to pass his urine through the urethra where such swelling as I have described exists, you may be quite sure that ulceration and abscess will occur, and that the urine will become extravasated. I would remind you that the retention of a moderate-sized elastic catheter in the bladder can do no harm; whereas, if you allow the urine to pass through the urethra, now perforated by ulceration at the seat of stricture, you may be quite sure that some of the urine will escape from the canal, and will pass into the cellular tissue of the scrotum or perineum, or both.—*Lancet, September* 4, 1869, *p.* 331.

69.—TREATMENT OF URETHRAL STRICTURE BY FORCIBLE DILATATION WITH MR. B. HOLT'S INSTRUMENT.

By Dr. J. Fayrer, Professor of Surgery, and Senior Surgeon, Medical College Hospital, Calcutta.

I have on former occasions described certain cases of stricture in which this mode of treatment was practised, and have expressed my impression that it is a valuable addition to our surgical resources in the treatment of this disease. It is unnecessary for me to repeat what I have already said generally in favour of forcible dilatation, but I may add that with greater experience I have acquired greater confidence in this mode of treating urethral strictures. The force which is necessarily used in the operation is suggestive of danger, and I confess that I had considerable misgiving as to its propriety at first; but I have now no hesitation in using the instrument, and I believe it to be generally attended with as little danger of causing constitutional mischief as may be the passage of an ordinary bougie through a tightly contracted and irritable stricture. I certainly have seen as severe an attack of urethral fever follow the latter as the former operation. In the Medical Times and Gazette of Aug. 18, 1866, I recorded three cases of stricture treated in this way, and in the Indian annals I have described three similar cases. In an address on Surgery to the British Medical Association, in speaking of urethral fever, March, 1868, I also described a case which proved fatal after the operation, and it is therefore unnecessary to recur to them. I shall, however, give an abstract of other cases since treated, which serve to confirm the favourable opinion I have formed of the operation.

Case 1.—T. S., a Swiss cook of a ship, aged 52 years, a healthy-looking man, admitted on March 4, with a tight irritable stricture of ten years' duration. For some time the ordinary treatment by dilatation was tried, but the progress made was very slow. On May 8, the stricture was ruptured by the passage of Holt's largest dilator. Very little bleeding followed, and comparatively slight constitutional disturbance. A full-sized catheter was passed immediately after the withdrawal of the dilator, and repeatedly afterwards until he was cured, on July 25.

Case 2.—L. A., an East Indian, aged 50, was admitted on July 27, with stricture of one year's duration. The urethra was strictured in two places—one in front of the scrotum, the other just in front of the bulb. He was otherwise in good health. The director having been introduced with some difficulty, the largest dilator was at once passed. A large catheter was passed immediately and daily afterwards. The constitutional symptoms were very slight, but he had incontinence of urine for some days. He rapidly recovered, and was discharged cured on August 8.

Case 3.—B. C. Gossamee, Hindoo, aged 40, admitted June 22, with stricture and urinary fistula, combined with scrotal elephantiasis. The stricture was very narrow, and just in front of the bulb. The stricture was split with the largest-sized dilator, and kept dilated with a full-sized catheter. The sinuses closed, and the scrotal tumour was then removed, from which having recovered, he was discharged.

Case 4.—S. C. G., a Hindoo boy, aged 5, was admitted on August 14, 1866, with a contraction of the urethra near the neck of the bladder, the result of lithotomy performed two years previously. The director having been introduced into the bladder, with some difficulty, the smaller dilator was passed, and a corresponding catheter was passed immediately after. He attended for some time as an out-patient, and appeared to be cured.

Case 5.—D. I., a healthy-looking young Hindoo, aged 24, admitted on September 3, with a stricture in the usual site. It was not very tight, nor of long duration. It was split with the full-sized dilator the same day, with comparatively little pain or hemorrhage. He would not remain in hospital, but attended as an out-patient for a few days until he was cured.

Case 6.—M. C. B., Hindoo, aged 60, a trader, was admitted on September 5, with stricture of some years' duration, situated in front of the bulb. The director was passed with great difficulty, and the full-sized dilator passed on the 8th. He recovered rapidly, attending as an out-patient until he was cured.

Case 7.—E. S., an American, steward of a ship, aged 32 years, admitted on September 7, with a tight stricture of ten years' duration. The stricture was ruptured with the full-sized dilator. He would not remain, but attended as an out-patient until cured.

Case 8.—F. K., a Mahometan servant, aged 44 years, admitted on March 11, 1867, with stricture in the usual situation of eighteen months' duration. No. 4 catheter was passed with difficulty on March 11, the stricture was split with the full-sized dilator; this was followed by a full-sized catheter. He did well, and left the hospital on March 17, of his own accord.

Case 9.—A., a Malay khalassie, aged 25 years, was admitted on April 29, 1867, with a very tight, almost cartilaginous stricture just in front of the bulb, of three years' duration. Catheters No. 2 and 4 were passed with great difficulty until May 2, when the stricture was at once split by the passage of the full-sized dilator. This was followed, as usual, by a full-sized catheter, which was passed daily until May 27, when he was discharged cured.

Case 10.—J. O., European, aged 36 years, admitted December 21, 1867, with stricture of ten years' duration, the stricture just in front of the bulb. It was split on December 24 with the full-sized dilator; this was followed, as usual, by a full-sized catheter (No. 12). He was discharged cured on February 15, 1868. On admission, catheter No. 2 was passed with difficulty.

Case 11.—R. B., Mahometan, aged 30 years, admitted July 6, 1868, with stricture of six years' duration. Had several times been in great trouble from retention of urine. The stricture was split with the full-sized dilator on the 7th, and he was discharged cured on August 1, No. 12 passing easily.

Case 12.—W. A., sailor, European, aged 33 years, admitted on August 18, 1868, with stricture of eleven years' duration. The stricture came after gonorrhœa, was in front of the bulb, and very narrow. It was split with the full-sized dilator on August 22, and he was discharged cured on September 6, *1868.—Med. Times and Gazette, July* 10, 1869, *p.* 45.

70.—ON THE TREATMENT OF RETENTION.

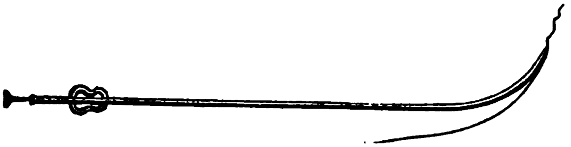
By J. W. S. Gourley, Professor of Clinical Surgery in the University of New York, and Surgeon to Bellevue Hospital.

[The following article is a description of a catheter which Dr. Gourley has lately devised for use in cases of retention of urine arising from stricture of the urethra, especially where there exists a false passage.]

The annexed figure represents, in reduced proportions, the instrument, and a portion of the guide, or conductor, passed through the canal at this point.

The catheter is three millimeters in diameter, nearly corresponding with No. 8 of the English scale, and is conical, its point being two millimeters in diameter, about equal to No. 1 of the same scale. A groove on its convex side extends a distance of four inches, and is bridged over in its last twelfth of an inch, so as to form a canal for the reception of a delicate whalebone guide. The catheter eye is on the concave side of the instrument, about three-fourths of an inch from its point, and is kept closed by a well-fitted stylet.

The curve of the instrument is equal to one-fifth of the circumference of a circle three inches and a quarter in diameter.



The manner of using it is as follows:—With a small syringe the urethra is to be filled with olive oil, and an attempt made to introduce a probe-pointed whalebone guide, half a millimeter in diameter, and of the length of an ordinary bougie, the point of which may be made temporarily spiral by immersion in boiling water, then twisting around a small staff, and suddenly cooling it. If its point becomes engaged in a lacuna, it is to be withdrawn a little, and again carried onward with a rotary movement. If it enters a false passage, it is to be retained *in situ* by the left hand, while another is passed by its side. If this second guide makes its way into the false passage, it is to be treated precisely as the first was, and the operation repeated till one guide can be made to pass the obstruction, and enter the bladder. Sometimes five or six guides are thus caught before the false passage is filled up, and the natural route opened. As soon as the bladder is entered by a guide—which may be known by the instrument being easily moved in and out—the other guides are to be withdrawn, the free end of the retained guide passed through the canal at the end of the catheter, and this instrument carried down the urethra along the guide until its point reaches the stricture. Generally, with slight pressure in the right direction, the catheter may be made to enter the stricture, and finally pass into the bladder.

The guide may be kept in position after the withdrawal of the catheter, and dilatation carried on by the successive introduction of larger-sized catheters of the same construction; or divulsion may be resorted to by means of Mr. Holt's or Sir Henry Thompson's instrument, modified by means of the terminal canal for the passage of the guide; or internal urethrotomy may be practised with any of the various urethrotomes, having only this simple modification; or, as has already on several occasions been done, the retention catheter may be made available in external urethrotomy, instead of Mr. Syme's staff.—*Lancet, June* 19, 1869, *p.* 842.

AFFECTIONS OF THE EYE AND EAR.

71.—ON OPHTHALMIA NEONATORUM.

By J. Soelberg Wells, Esq., Ophthalmic Surgeon to King's College Hospital.

The first indication in the treatment of ophthalmia neonatorum, is cleanliness. The infant's eyes should be washed directly after birth, and the greatest care be taken that the same sponges, cloths, water, &c., are not used for the mother and child. The latter should not be exposed to cold winds, draughts, or bright, glaring light, &c. If its eyes are red and irritable, and there is a little muco-purulent discharge, a weak collyrium of sulphate of zinc or alum (one or two grains to an ounce of distilled water) should be applied two or three times daily. But if the inflammation runs high, and the discharge is thick, creamy, and copious, stronger astringents must be employed. In out-patient practice, where we cannot see the patients daily, the use of the following injection will be found the best mode of treatment:—Sulphate of zinc, two grains; alum, four grains; distilled water, one ounce. Some of this is to be injected, with a small glass syringe, between the lids every fifteen or thirty minutes during the day, and every two or three hours at night; the frequency of the application and the strength of the injection varying with the exigencies of the case. Before it is employed, the eye should be cleansed with an injection of lukewarm water, so that the discharge may be washed away. Every day or two a drop of a strong solution of nitrate of silver (from four to ten grains to the ounce) may be applied. If only one eye is affected, the other should be protected against contagion by a firm pad of cotton wool and bandage, this being removed twice daily so that the eye may be washed. If the patient can be seen once or twice daily, I prefer to apply the mitigated crayon of nitrate of silver (one part of nitrate of silver to one or two parts of nitrate of potash) to the conjunctiva, as we can regulate and localise its effect better. The lids being well everted, the crayon is to be lightly applied to the palpebral conjunctiva, its action being at once neutralized by a copious application of salt and water. If there is great swelling of the conjunctiva, the latter is to be freely but very superficially scarified with a small scalpel directly after the neutralisation of the caustic. Then cold (perhaps iced) compresses should be applied to the lids, to diminish the inflammatory reaction, and assist in the contraction of the bloodvessels; but great care and circumspection are required in their employment, for if they are continued too long they may prove very injurious. If the edges of the lids are sore and excoriated, a little citrine ointment should be applied. When the disease presents the cyanotic character, and the discharge is thin and flaky, the nitrate of silver must be used with great caution. Wecker recommends small doses of mercury in such cases. Should the cornea become cloudy or ulcerated, atropine drops (two grains in an ounce of water) are to be used three or four times daily, the astringent treatment being continued as before. If the ulcer threatens to perforate, it should be pricked with a fine needle, and the aqueous humour be allowed to flow off very gently; this may have to be repeated several times. If perforation has taken place, and there is prolapse of the iris, the latter should be pricked with a needle, and on the aqueous escaping the prolapse will collapse, and then a firm compress bandage should be applied. It may be advisable to repeat the pricking of the prolapse several times. If the prolapse is large, it should first be pricked, and then snipped off with a pair of scissors. When the perforation of the cornea is extensive, and the lens is bulging into it, an incision should be made in the cornea and the lens be allowed to escape, a firm compress bandage being at once applied. We may thus succeed in saving a sufficient amount of clear cornea to permit of the formation of an artificial pupil at a subsequent period, and thus perhaps save a certain degree of vision.

Lancet, Aug. 21, 1869, p. 261.

72.—ON THE EMPLOYMENT OF TANNIC ACID IN SOME DISEASES OF THE EYE AND EYELIDS.

By ROBERT HAMILTON, Esq., Surgeon to the Southern Hospital, Liverpool.

Phlyctenular ophthalmia, characterised by the appearance of one large pustule, or two or three smaller ones, at the edge of the cornea, each surrounded with a zone of vividly injected vessels, and accompanied with a considerable amount of intolerance of light, lachrymation, and pain, yields to three or four applications of the tannic acid. A more aggravated form of the same disease, phlyctenular corneitis, or herpes corneæ, in which the cornea has one or more pustules or vesicles situated near its margin, or studded on different parts of it, and the patient suffers greater pain, and the intolerance of light is greater, is also benefited by the daily dusting of the tannic acid upon the cornea. In these cases, however, as they generally occur in highly strumous children, the use of the tannic acid has to be combined with general treatment. The tendency to relapse is so common in this particular form of eye disease that we cannot depend upon local remedies alone. Tonics, especially cod-liver oil and quinine, are essential; these, with calomel, probably, form the most successful plan of constitutional treatment. To a child under six years of age, one-fourth of a grain of calomel to half a grain of quinine, given three times a day, and a fine spray of the tannic acid powder thrown upon the cornea once a day, for four or five days in succession, has, as a rule, proved sufficient to remove the disease.

There is a form of phlyctenular ophthalmia called by some authors fascicular corneitis, in which a number of minute blood-vessels are seen passing from the conjunctiva to the cornea, forming a triangle, at the apex of which is a pustule more or less near the centre of the cornea, and a cloudiness of the latter is observed immediately in advance, and surrounding the pustule. This disease is described by a late writer as extremely rare. It has not been so uncommon in Liverpool. I have seen several cases during the last three months, and mention the circumstance because this variety of phlyctenular corneitis is especially amenable to the tannic acid treatment. It occurs generally in young people and adults otherwise healthy, and requires nothing more than the daily application of the acid for a week or ten days to entirely remove it.

In granular ophthalmia, both acute and chronic, I have used the tannic acid with the best effects. In the acute and subacute forms, where upon eversion of the lids we find the conjunctiva highly vascular and swollen, the papillæ prominent with numerous granulations, the cornea covered with enlarged vessels, with haziness of its tissue in the interspaces of the vessels, and there is much photophobia and lachrymation, I have covered the surface of the palpebral conjunctiva—in other words, the granulations—and the papillæ, with a layer of the finely pulverized tannic acid, and then carefully inverted the lids, so as not to remove the powder in doing so, and repeated this treatment once daily for about five days in succession, and then increased the interval to two days and three days, and have found the granulations to subside rapidly, and contemporaneously with their doing so the enlarged vessels thickly studded on the cornea have contracted, and become more and more indistinct, and the haziness less evident, whilst the patient tells upon each occasion how much his sight is improving. In chronic granulations, cases of which present themselves in varying degrees of intensity, from the simple granulations on the palpebral conjunctiva, which have as yet produced no alteration of the cornea, to the more advanced cases in which repeated attacks of conjunctival inflammation have developed the granulations and rendered them more and more prominent, and so caused such an infiltration of the cornea, called pannus, as almost to obscure vision altogether; in each and all of these the use of the tannic acid has steadily diminished the granulations, and the vascularity of both cornea and conjunctiva, and improved the vision.

In two cases of pannus, at present under treatment, the upper half of the cornea is affected *in the one case, and the lo*wer half in the other. The latter *has occurred in a youth of eighteen*; his eye was similarly affected about

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72.—ON THE EMPLOYMENT OF TANNIC ACID IN SOME DISEASES OF THE EYE AND EYELIDS.

By Robert Hamilton, Esq., Surgeon to the Southern Hospital, Liverpool.

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There is a form of phlyctenular ophthalmia called by some authors fascicular corneitis, in which a number of minute blood-vessels are seen passing from the conjunctiva to the cornea, forming a triangle, at the apex of which is a pustule more or less near the centre of the cornea, and a cloudiness of the latter is observed immediately in advance, and surrounding the pustule. This disease is described by a late writer as extremely rare. It has not been so uncommon in Liverpool. I have seen several cases during the last three months, and mention the circumstance because this variety of phlyctenular corneitis is especially amenable to the tannic acid treatment. It occurs generally in young people and adults otherwise healthy, and requires nothing more than the daily application of the acid for a week or ten days to entirely remove it.

In granular ophthalmia, both acute and chronic, I have used the tannic acid with the best effects. In the acute and subacute forms, where upon eversion of the lids we find the conjunctiva highly vascular and swollen, the papillæ prominent with numerous granulations, the cornea covered with enlarged vessels, with haziness of its tissue in the interspaces of the vessels, and there is much photophobia and lachrymation, I have covered the surface of the palpebral conjunctiva—in other words, the granulations—and the papillæ, with a layer of the finely pulverized tannic acid, and then carefully inverted the lids, so as not to remove the powder in doing so, and repeated this treatment once daily for about five days in succession, and then increased the interval to two days and three days, and have found the granulations to subside rapidly, and contemporaneously with their doing so the enlarged vessels thickly studded on the cornea have contracted, and become more and more indistinct, and the haziness less evident, whilst the patient tells upon each occasion how much his sight is improving. In chronic granulations, cases of which present themselves in varying degrees of intensity, from the simple granulations on the palpebral conjunctiva, which have as yet produced no alteration of the cornea, to the more advanced cases in which repeated attacks of conjunctival inflammation have developed the granulations and rendered them more and more prominent, and so caused such an infiltration of the cornea, called pannus, as almost to obscure vision altogether; in each and all of these the use of the tannic acid has steadily diminished the granulations, and the vascularity of both cornea and conjunctiva, and improved the vision.

In two cases of pannus, at present under treatment, the upper half of the cornea is affected in the one case, and the lower half in the other. The latter has occurred in a youth of eighteen; his eye was similarly affected about eighteen months ago; he was at that time under my care, and the treatment then adopted was the occasional touching of the granulations with the sulphate of copper, and the use of the nitrate of silver ointment. He was at least three months under treatment. When he applied again about a fortnight ago, the lower half of the cornea, and the inside of the lower lid, were much more extensively altered in appearance than when he attended before, so that I can scarcely think the eye has been quite well in the interval, though he states it was, up to a month ago. The whole of the conjunctiva of the lower lid, when he presented himself, was highly granular and deeply injected to the very edge of the tarsal cartilage; there was slight trichiasis, a few hairs being turned somewhat inwards; the lower half of the cornea had numerous parallel vessels, running up beyond the level of the pupil, and the intervening spaces between the vessels were clouded. He could only distinguish the letters of No. 20, Jaeger's types. The tannic acid was applied daily for the first four days, and on alternate days since, and the eye has nearly recovered its normal appearance.

In the other case of pannus, a girl of 20 had been under treatment for three months before she applied at the dispensary ten days ago. The granulations were confined to the upper lid, and the upper half of the cornea was in the same condition as in the previous case. The palpebral conjunctiva of the affected lid had a glazed appearance near the retro-tarsal fold, with two or three cicatrices running lengthways. Towards the margin the granulations were prominent and abundant, but pale. The same treatment adopted in this case has been followed with quicker results, for after the fifth application of the tannic acid, the vessels of the cornea had almost entirely disappeared, and the latter is now quite transparent.

The mode in which I apply the tannic acid is by means of a small india-rubber ball with a glass nozzle; the latter is removed for the purpose of half-filling the ball with the tannic acid, and when the nozzle, which is of somewhat large calibre, is replaced, and pressure made upon the ball, a fine dust or spray of the powder is emitted. This is directed upon the everted lids, when granular, so as to cover them with a coating of the acid, and the lids are carefully inverted again so as not to disturb the powder, and the patient is prevented from rubbing the eye. In pustular ophthalmia the lids are held apart, and the powder spray sent directly upon the pustules. Much less pain follows the application of the tannic acid than occurs after most of the astringents at present in use. The slight irritation produced passes off in a few minutes. Children bear it much better than caustic.

Besides the positive benefit derived from the application of the tannic acid in granular inflammation, it possesses a recommendation which is of great value; its use does not tend to alter the structure, or impair the efficiency of the palpebral conjunctiva in the way that the acetate of lead, sulphate of copper, and nitrate of silver do. The contraction and cicatrisation of the conjunctiva which these metallic astringents promote, with the evil results arising therefrom—such as trichiasis, entropion, and pannus—are avoided by employing the vegetable astringent. The very principle upon which the sulphate of copper and the others mentioned are said to do good, is by the setting up of a certain amount of inflammatory action sufficient to produce absorption. Three of the most recent works on eye diseases may be quoted in confirmation of this. Thus Bader, at page 114 of his comprehensive treatise on the Human Eye, says that "the object of the application of the green-stone and other caustics is, not to destroy the granulations, but to excite such irritation in the conjunctiva, as is best adapted to promote the elimination of the material of which the granulations consist;" and Soelberg Wells, in his recent work, says, at page 91: "These applications hasten the absorption of the morbid products by producing a temporary inflammatory congestion of the blood-vessels." Again, at page 57: "The maintenance of a certain degree of inflammation of the conjunctiva is necessary and desirable, in order to produce and hasten the absorption of the granulations." And Henry Power, in his "Illustrations of some of the principal Diseases of the Eye," at page 211, considers "that the *mode in which* moderately acute inflammation effects a cure, to be by causing an effusion of lymph, which compresses and obliterates the vessels supplying the neo-plastic formation," and that "very high degrees of inflammation act prejudicially by causing an increased and fresh development of vessels which, in their turn, induce a return of the granulations in their worst and most intractable form." If, therefore, these substances act as irritants, it is impossible in actual practice so to watch their effect, and regulate their action, that only the requisite degree of inflammation is excited. It is more than probable that the very marked improvement often observed after the first application, will be followed up, when the patient next presents himself, with a second use of the same remedy; and though after this the interval may be increased, yet in the majority of cases seldom less than four or six applications of the caustic is made use of, according to the size and extent of the granulations.

If the amount of pain caused is a true measure of the extent of the temporary inflammation set up, then that induced by the use of nitrate of silver and sulphate of copper is not slight, for it often lasts many hours, and is generally described as being most severe, so much so that though the poor patient admits the benefit, he shrinks from the remedy.

Now, if so much pain, heat, redness, and swelling, follow the use of these irritants, we may be sure their application is not an unmixed good, but that certain alterations of structure are subsequently induced, such as destruction of healthy tissue and cicatrisation of portions of conjunctival membrane, leading to a derangement of the functions of many of the parts concerned in this delicate organ. Experience proves that the improvement resulting from the use of sulphate of copper is most apparent after the first and second times of applying it, and that each succeeding application after that does not lead to progressive restoration to a healthy condition. The conclusion to be arrived at from this is, that the baneful effect of the styptic has begun to manifest itself, and is creating new mischief.

The tannic acid acts apparently in a different manner from the foregoing. It does not seem to excite any inflammation; beyond a momentary disagreeable feeling, there is very little pain produced, neither is there any redness, heat, or swelling. Increased lachrymation for a few minutes is all that is observed. It probably acts by mechanically interfering with the flow of blood in the vessels, suspending it altogether in those of microscopic size, and thus the enlarged papillæ and the granulations, being deprived of their sources of supply, shrivel up. As a necessary sequence to this, the enlarged bloodvessels traversing the cornea lose the stimulus of the friction produced by the granulations; and their development at the first being due solely to abnormal action, they disappear when that action ceases.—*Practitioner, June*, 1869, *p.* 346.

73.—HINTS ON THE TREATMENT OF IRITIS.

By Robert Brudenell Carter, Esq.

[The treatment of a case of iritis is so important, as the results of a mistake are disastrous to the eye, that the question "What is the earliest symptom of the disease?" at once suggests itself. Impairment of vision, with pain and uneasiness in the eye, diminished lustre of the external surface of the iris, and contraction of the pupil, not yielding without difficulty to atropine, are perhaps the earliest indications of the approaching inflammation.]

In actual practice, iritis is not frequently overlooked, and it may be well, before speaking of its cure, to lay down a simple rule for its detection. That rule is, that being one of the most important forms of ocular inflammation, it should always be present to the mind of the surgeon, *and should always be looked for in an inflamed eye.* If there, and if looked for, it cannot fail to be found. Something will depend, of course, on the way of looking, the first precaution necessary is to have a good light, so placed that the iris and pupil are not concealed or obscured by reflections from the cornea. From want of attention to this simple point, I have seen an error made by a very skilful and experienced ophthalmic *surgeon.* The patient being rightly placed, and the sound eye closed, the shadow of the surgeon's hand should be made to fall upon the affected eye, and to leave it suddenly, two or three times in succession. If the pupil dilate and contract quickly, all is well; if its movements are slow and uncertain, or restrained at any point of its circumference, atropine should be applied, and then iritis, if present, will be shown by irregularity of the shape of the dilated pupil, or even by its resisting dilatation.

It is possible that some might be in danger of mistaking acute glaucoma for iritis; but this error may always be avoided, by remembering that acute glaucoma is the only inflammatory disease of the eye in which the pupil is found dilated. Exception may, perhaps, be made with regard to cases that resemble glaucoma in their immediate cause; namely, the inflammations that are due to the increased tension produced by a growing intraocular tumour.

The disease once recognised, we are brought fairly face to face with the question of treatment; and, in the first instance, with the question whether there is still in operation any cause that can be speedily removed. An impacted foreign body, ciliary irritation propagated from the other eye, and the imperfect excretion connected with the lithic diathesis, are among the causes of this kind that are most probable, and that should be sought for. The two first would require, when practicable, to be removed by surgical operation, and the last by such eliminative medicines as the case might demand.

In the meanwhile the presence of the effect must not be forgotten. Even when clearly depending upon constitutional causes, iritis must not be left to the unaided operation of remedies calculated to remove those causes. The inflammation affects an organ so delicate and important, and may produce so much permanent mischief in a short space of time, that it must be subdued as speedily as possible by the aid of local treatment. For this purpose atropine is the chief agent. A solution of the neutral sulphate in distilled water, of the strength of from two to four grains to the ounce, must be dropped into the eye, at first at short intervals, as every hour, and when dilatation is produced, or in case the pupil after a few applications still resists dilatation, about twice or three times a day. Dr. Heymann, of Dresden, has advised, in severe cases, the application of a particle of solid atropia or of its sulphate to the tarsal conjunctiva, as being more certain and powerful in its action than any solution; and in some instances I have followed this practice with advantage. The precise method of application is, however, a matter of small importance, and the point to bear in mind is, that the use of atropine, in every case of iritis, whatever else may be done or left undone, is the one thing that should never be omitted at the commencement of the treatment.

It was at one time supposed by many, or even generally, that the chief value of atropine depended upon its power to dilate the pupil. There can be no doubt of the great importance of this mode of its action, by which the pupillary area becomes so much expanded, that, as a mere question of quantity, it is with difficulty blocked up by effused lymph, and by which any adhesions that have been formed are stretched and weakened, and thus placed under conditions favorable to their detachment and absorption. But in the most severe cases atropine does not begin to dilate the pupil until the inflammation has first been in some degree subdued, or has subsided; and yet in these very cases, its beneficial influence is, perhaps, even greater than in others. I should explain this influence in few words, by saying that, besides having some not very pronounced action as a sedative, and besides diminishing hyperæmia by producing some contraction of the blood-vessels, it secures rest to the parts within the eye. In treating the ophthalmiæ generally, we perhaps hardly reflect sufficiently upon the ceaseless movements of the structures with which we have to deal. The recent researches of Henson and Voelckers, besides those of other observers, have shown that the choroid, as a whole, is perceptibly shifted to and fro by the action of the muscle of accommodation; while the size of the pupil, and probably also, the amount of blood in the iris, vary not only with every adjustment of the eye for distance, but with every slight variation in the amount of incident light. These changes, moreover, take place simultaneously in both eyes, under the influence of impressions acting upon a single one only; and hence, in monocular iritis, every visual sensation experienced by the sound eye, and every variation in the amount of light received by it, even such as are dependent on the momentary withdrawal and replacement of a shading hand, or upon the momentary direction of the face towards a more or less lighted portion of the room, are attended by dragging and movement of the parts that are inflamed. Although inflammation may, and often does, affect the iris alone, yet there are many instances in which it spreads from this to other structures, and produces most disastrous effects. The importance of absolute rest in preventing such extensions, and the liability of ceaseless movement to favour it, are both so obvious, that it is needless further to dwell upon them, and (since atropine produces temporary paralysis of all the parts concerned in these movements) they furnish, to my perception, at once the most rational explanation of its value and the most cogent reasons for its sedulous employment.

[There are, however, certain impediments to the use of atropine, the most serious of which is when the atropine acts as a local irritant. This often arises from the solution used losing its neutrality. Practically, however, this difficulty has little bearing upon iritis, in which the prolonged use of the drug is not often needed.]

When all hitherto described has been carried out, there will still remain cases in which, notwithstanding the use of atropine, the relief of congestion, and the subjugation of pain, the pupil does not dilate, and vision either deteriorates or at least does not improve. In these cases it is found, as a mere matter of fact, that mercury, given rapidly, but discreetly, until the gums show some slight sign of its constitutional effect, will immediately break the chain of morbid action. From the very day on which the mercurial line becomes apparent the sensations of the patient are relieved, and the symptoms of inflammation decline. I am not prepared to discuss, at least in the space accorded to me here, the mode of action of mercury in iritis; but I may say that I think its effect is quite as declared in the traumatic or in the rheumatic forms as in the syphilitic, and that the indication for its use is to be sought entirely in the severity or obstinacy of the attack, and not at all in the cause by which it was excited.—*Practitioner, July*, 1869, *p.* 21.

74.—ON AN IMPORTANT NEW APPLICATION OF CALABAR BEAN.

By T. Wharton Jones, Esq., F.R.S.

[The following case introduces to our notice a new resource in the treatment of paralysis of the third nerve, and suggests interesting considerations as to the true physiological action of the bean.]

Mrs. E. W., a widow, aged 41, was admitted into University College Hospital under Mr. Wharton Jones, first as an out-patient, and shortly afterwards, May 31, 1869, as an in-patient. She laboured under complete paralysis of the third nerve on the left side, of a rheumatic character.

Had rheumatic fever two years before, and was laid up therewith for three or four months. About the middle of April of the present year she was exposed to a draught of air, and almost immediately after noticed that there was something the matter with the left eye, as she could not raise the upper eyelid.

On examination of the affected eye at her admission, it was found that the patient could not raise the upper lid, not turn the eyeball towards the nose, nor move it upwards or downwards. Besides this, the pupil was in the middle state of dilatation, and incapable of contracting under the stimulus of light.

The patient complained of pain over the eyebrow, in the temple, and in the side of the head.

When I first saw the case, I dropped a solution of atropia into the left eye for the *purpose of testing the* action of this agent on the dilator pupillæ.

The ensuing dilatation had passed off, and the pupil had regained its previous middle state before the patient presented herself again. She was now taken into the Hospital and put on good diet, as it appeared that she had been living very poorly of late. At the same time she was ordered a pill containg 1 grain of calomel, ½ grain of extract of colchicum, and 2½ grains of Dover's powder night and morning.

I now for the first time dropped a solution of the extract of Calabar bean into the affected (left) eye for the purpose of testing the action of that agent on the paralysed sphincter pupillæ. In doing so, the idea glimmered through my mind that the Calabar bean might possibly exert a beneficial action on the paralysed levator palpebræ, and on the similarly affected recti muscles.

The effect of the application of the Calabar bean, made on the 31st of May, was to contract the pupil to the size of a pin's head in the usual time.

On the 2nd of June, the action of the Calabar bean on the pupil had passed off, but it was found that the patient had acquired some slight power over the upper eyelid, so as to raise it a little by a strong effort. Seeing this, I repeated the application of the Calabar bean, as above mentioned, and discontinued the other treatment.

The quantity of Calabar bean used at a time was about ¼ grain of the extract (an extract for which I am indebted to Dr. Fraser, of Edinburgh) reduced to the state of an emulsion by the addition of a few drops of water. This was freely poured into the eye.

On the 4th of June the patient could raise the upper eyelid a little more. The Calabar bean drops were accordingly repeated and continued thereafter three times a week. Under this treatment, I found at every visit I made to the hospital that the power over the levator palpebræ had increased.

On the 14th of June, the report states that the patient could raise the upper eyelid sufficiently for the purpose of vision, and that she could move the eyeball both inwards and upwards, but only a little downwards. There was still double vision.

By the 21st of June, the patient had acquired nearly complete command over all the muscles of the eyeball, except the inferior rectus, and could raise the upper eyelid as well as that of the right side, and there was but slight diplopia.

On Monday, June 28, it is reported that Mrs. W. could raise the left upper eyelid well, could turn the eyeball towards the nose and upwards well, but could not quite fully turn the eyeball downwards. On looking downwards, therefore, she saw double.

Wednesday, June 30. All the movements of the eye perfect, and no double vision, except in a slight degree on looking downwards. In regard to the pupil, it is to be remarked that it became contracted to the size of a pin's head at the usual interval after each application of the Calabar bean, but again returned to the previous middle state when the influence of that agent had as usual passed off.

The sphincter pupillæ has not, like the levator palpebræ and muscles of the eyeball supplied by the third nerve, as yet regained its power permanently, so as to contract under the influence of the action of the light on the retina. It is to be noted that the pupil of the right eye is in a nearly similar state, being but little movable under the stimulus of light. The adjusting power for the vision of near objects is impaired in both eyes, so that the patient requires the help of convex glasses sixteen inches' focus to read with. The sight has otherwise remained good.

The history of the above case, taken together with some further observations and experiments which I have made, throws light, not merely on the action of the Calabar bean, but on the nature of the very interesting antagonism which exists between the effects of the latter and those of atropia. In the first place, I shall relate, as a clinical supplement to this example of the action of Calabar bean, an interesting experiment with atropine in a case of paralysis of the external rectus, depending, probably, on some intra-cranial affection. I was led to try this remedy by the consideration that the sixth nerve, which supplies the external rectus, is very closely connected with the sympathetic, and that the action of atropia is probably upon the latter. The patient had been some time under treatment, and under the use of iron and nux vomica his general health and strength had greatly improved, and the paralysis of the external rectus had considerably diminished. This case, being of probably intra-cranial origin, was likely to be less amenable to *local* treatment than the other. As soon, however, as I began to drop atropia (gr. iv—℥ i) into the eye, the progress of the external rectus towards recovery was strikingly hastened, and all other treatment was discontinued, as unnecessary. This observation, together with the case first related, seems to point clearly to an antagonism between the two drugs, as regards effects upon the eye; atropine stimulating the sympathetic, Calabar bean the third nerve. This is not the whole of the antagonism, however, between the two agents. I have made a series of observations upon the circulation of the frog's web and of the rabbit's ear, as affected by the local application of Calabar bean and atropine respectively, from which the important circumstance appears clearly made out, that *while atropine contracts the arteries, Calabar bean contracts the veins.* In the frog's web only the atropine effect can be clearly demonstrated, for the *veins* of the web are hardly at all muscular; but in the rabbit's ear the effect of Calabar bean upon the veins can be well seen, the latter being well furnished with muscular fibres. The hair should be shaved off, and a vein of fair size being selected, the epidermis over it is rubbed thin with a piece of fine sand paper, great care being taken not to carry this process too far. It is necessary then to wait a little time in order that the slight irritation thus produced may subside. The solution of extract of Calabar bean is then applied over the vein, and contraction follows speedily and in a marked degree. The effect of this agent in causing contraction of veins can also be exhibited to a limited extent, but still distinctly, in the human subject. Under the application of the solution of the extract to a slightly congested conjunctiva, if we closely watch the superficial veins of medium size and running a straight course towards the cornea, we shall convince ourselves that they diminish in calibre *pari passu* with the contraction of the pupil. Very large and tortuous rectal veins are not amenable to this influence.—*Practitioner*, *Sept.*, 1869, *p.* 160.

DISEASES OF THE SKIN.

75.—ON EKZEMA.

By Erasmus Wilson, Esq., F.R.S.

There are few things in philosophy more remarkable than the change which has taken place in the medical mind, within the last few years, as to the signification of the word *disease*. At one time it was believed that disease was something foreign to the organisation; at the present time it is recognised that disease is nothing more than discordant and untimely action; it is the jarring string of the musical instrument; it is, to travesty a popular phrase for which we are indebted to Layard, the right thing in the wrong place. Very generally, perhaps always, for we do not at this moment remember an instance to the contrary, it is a reparative process, but, alas! too frequently the reparation is a *darn* by which the whole fabric is ultimately ruined. And we cannot place before you a more dire picture of impending destruction than that of the substitution of one tissue for another; let us say nerve substance for muscle; vascular tissue for bone; bone for vascular structure; fat for heart-substance; connective tissue, or any member of the cell family, for more highly organised structures; or one or more of these tissues for skin. Herein lies, in many instances, a terrible realisation of the nature of disease.

Such conditions as those now referred to bring under our consideration the ruling and co-ordinating and maintaining power of that sublime essence, LIFE. We may not be scientific enough to put life into a bottle and weigh it or measure it, for such, we are told, are the aims of science; but it demands of us little *philosophy to recognise* its existence, and to note and to observe its laws. Of life in excess we can form no conception; but life, in its multiple degrees of declension, from health downwards to disease and dissolution, is the daily object of our observation and study. We have said that disease is "discordant and untimely action;" that it is the "right thing in the wrong place;" we may take a step further, and say that the regulator of discord, of untimely action, of misplaced action, is *life*. Our business, then, as medical men, is with life, is to sustain life; and to this one end to direct all our inquiry and all our energies. If we were asked:—What is disease of the skin? we should answer—it is a lowered vitality of the tissue of the skin, manifesting itself by abnormal action. If upon these premises, we further inquire, What is the cause of disease of the skin; and *a fortiori* of ekzema? The answer would be—debility, constitutional and local; debility of the system, and debility of the skin.

Having now entered upon the question of the etiology, or the cause, of ekzema, we may repeat that the skin falls into a condition of disease because it is weak; and that the *cause* of skin disease, or, if you will, the *cause of ekzema, is debility*. And, as the consideration of "cause" involves a series of consequences, we may further state, that the skin is weak either from *hereditary* quality or from *accidental* circumstance; the accidental causes being *constitutional*, or such as create debility of the skin through the agency of the system; and *local*, or such as produce debility by direct operation on the part. Let us look at these causes when displayed in a tabular form; we then have:—

$$\text{Skin debility}\begin{cases}\text{Hereditary}\\ \text{Accidental}\begin{cases}\text{Constitutional}\\ \text{Local.}\end{cases}\end{cases}$$

Hereditary ekzema is by no means a rare manifestation of the disease. We meet with it in infants, one or other of whose parents is ekzematous; we meet with it under similar circumstance in the adult; or it comes before us a sequela in the form of xeroderma, or ichthyosis. And we may be permitted to inquire:—What it is that is conveyed by hereditary transmission from the parent to the offspring? To this question the simplest of all answers is evidently the most correct, namely, *tissue resemblance*. Just as the features of the child have their type in the parent, so also have its tissues; a type which is constituted, not of figure alone, but also of function. We have just travestied the language of a distinguished politician, and we venture now to travesty, but with a deeper veneration, a holier writing:—"And the *morbid conditions* of the parent shall be visited on the children"; for this law is indeed as true in its bearing upon physical conformation as it is in reference to the moral attributes of the individual.

But what shall we say to a doctrine that would convey, as an answer to our question, the idea of the transmission of a virus? Why, simply that it has no foundation, is false and obsolete, and only fitting to be trodden under foot. And yet this idea has prevailed aforetime, but is now, as we believe and sincerely trust, utterly extinct.

[After considering the causes, constitutional and local, Mr. Wilson observes:]

There is a group of remote predisposing causes, to which we have given the name of NEUROTIC. They are not diathetic, neither are they dependent upon the mere absence of nutrition; nor can the digestive and assimilative functions be especially blamed; but their essence is irritability; irritability taking its origin in nervous debility; and on that account we call them nervous or neurotic. For the subject of nutritive causes we should look to infants, to children, to the growing age of youth, and to the parturient period; for the subjects of assimilative causes, we seek in the mid-period of life, when the material of nutrition is useless otherwise than as a stimulant; when, in consequence, it is present in excess; and when, as a further consequence, it undergoes chemical transformations that become excitants of disease. While, the neurotic group is supplied by those who have passed the meridian, in whom waste has taken the place of appropriation; or those, at earlier periods of life, in whom the nervous system has acquired an ascendency over the organism and tends to waste its kingdom by excessive, by ill-regulated, and by morbid activity.

The exciting causes of ekzema belong chiefly to the class of local irritants, and are especially concerned in the production of the local forms of the disease, and the remarks which we have made heretofore on the relative character of causes are particularly applicable to the present group. For example, cold and heat and moisture are frequent predisposing causes, and they are also, under other circumstances, common exciting causes. Need we remind you of the chapped wrists and hands of cold weather, ekzema erythematosum et fissum; of ekzematous eruption engendered by the direct agency of heat, as in ekzema solare; or of that very common cause of ekzema resulting from the combined influence of heat and moisture, as in the case of ekzema axillare and ekzema perinei. Then we have ekzema resulting from clothing and bedding of too heating a quality, and especially when heat and perspiration are united; ekzema from the flow of the tears, or saliva, of discharges upon the skin, and ekzema mamillarum. And then there is yet a more striking and homely example of the irritant consequences of combined moisture and heat in the instance of the common poultice; a large number of ekzematous legs owe their origin solely to the apparently harmless, but in reality dangerous, poultice.

Besides these we have an active exciting cause of ekzema in friction, and especially in that more severe form of friction to which itching incites, namely scratching. Hebra has the credit of making the remark that the eruption of scabies, which is an ekzema, is due, less to the direct irritation of the acarus than to the scratching to which its titillation necessarily leads. We need not accept this statement as a fact, but it is convenient as an illustration. Then follows the extensive family of the irritants—the mechanical irritants, such as sugar, flour, brick-dust, and lime, in the instance of the grocer's itch, the baker's itch, and the bricklayer's itch; and the chemical irritants, for example,—alkalies, acids, tincture of arnica, cantharides, and croton oil.

Varicose disease of the veins of the lower extremity is a common cause of local ekzema; distension of the minute venules of the skin occasions itching; the nails are brought into requisition to relieve the pruritus, papulæ result from the increase of irritation caused by the scratching, and a papular ekzema is forthwith established. It may be questioned, as in the case of scabies, whether the varicose veins, as well as the acarus, may not also be regarded as a predisposing cause, and the scratching the real exciting cause. Again, a scratch, an abrasion, or a leech-bite; the puncture of the ears for earrings, or the slight operation of vaccination, have also been known to be the starting-point of an ekzema, and in this sense a traumatic cause.

We opened our inquiry into the nature and qualities of ekzema by impressing upon you the necessity of a thorough knowledge of this one disease, not only on account of its own individual importance, but also because it must be regarded as the type of cutaneous disease in general, and the standard with which all other diseases of the skin are to be compared. We have, therefore, pursued the subject of its etiology at considerable length, more lengthy possibly than may have consorted with your patience; nevertheless, the subject is far from being exhausted, and will well repay personal examination for yourselves. For the present we deem it expedient to dismiss it, and conclude with a summary more easy of being borne in remembrance than our previous lengthened detail. The cause of ekzema is debility, sometimes inherent or diathetic, sometimes hereditary, and sometimes accidental or acquired. Every condition which tends to produce debility is therefore a cause of ekzema. It may be that the cause is a direct excitant; or it may be a predisponent requiring the ulterior stimulus of an excitant. So that, in ekzema, as in most other diseases, two factors are necessary to the production of the affection: first, a condition of the body favourable to morbid action; and, secondly, an excitor capable of setting up a morbid action. We will illustrate this point by one or two popular examples, in order to impress the matter more forcibly on your recollection. You know the encrusted ekzema of infants, termed *crusta lactea*, a state of disease which conveys in its name both its cause and the effect of that cause. *Insufficient or bad* milk is the occasion of debility; and, secondly, insufficient or bad milk deranges the stomach, and throws out an eruption on the skin. Again, we hear of ekzema from dentition, and of the very general impression amongst medical men that such an eruption is not to be treated; let us see how the case stands in this instance: painful dentition causes want of rest, disturbance of the digestive organs, debility; painful dentition is therefore a predisposing cause; then an exciting cause, such as cold or heat and moisture, steps in, and ekzema is established. Now, can you conceive any objection to removing, *if you can*, the predisposing cause, or the exciting cause, even if you dread to cure the proximate cause, that is, the disease? We think not; neither do we think that you would lose your *aplomb* of self-respect, if, in honestly allaying the causes, you inadvertently cured the disease. Or, let us take another case of still more importance as far as being thoroughly understood, namely, ekzema from vaccination. Vaccinia, as you well know, is a modified small-pox; the vaccine fever always occasions more or less of debility, consequently a state favourable to the invasion of ekzema; in other words, vaccination, with perfectly pure lymph, is a predisposing cause of ekzema; and another factor, namely, an exciting cause, completes the nosogenetic circle. Or the case may stand thus: the child is hereditarily ekzematous, and then the mere puncture of vaccination becomes in itself the exciting cause. We know the care which vaccinators usually evince in the selection of subjects for vaccination, and to this cause is to be attributed the extreme rarity of ekzema after vaccination; but with all the care they can adopt, an accident of this kind will sometimes happen. A lady brought to us, a short time back, an ekzematous child, in whom vaccination had brought out vaccinella; in other words, an eruption of umbilicated vesicles resembling those of small-pox; and we have recorded, in our writings, similar examples. But more frequently, the reverse of this occurrence is experienced, and the ekzematous diathesis generally refuses to respond to the vaccine impregnation.

And now we will leave the important question of cause, and pass on to that of *prognostics*. You will be consulted by mothers whose children are in a deplorable state from ekzema, and who may have been some time suffering before they came under your notice; and they will put to you two questions:—Is there danger to life? Is there danger of deformity? And to both of these questions you may answer in the negative. Ekzema is a disease of the "summa cutis" of the most superficial stratum of the derma, a disease in which the secreting faculty is in excess; a kind of catarrh of the external skin; a disease in which disruption and separation of the epidermis, with profusion, accumulation, and disiccation of secretions, together with a moderate amount of œdematous swelling, are the essential characters; there is neither deep inflammation nor destruction of tissue, and therefore all these appearances clear away like an exuviated cuticle when a cure is effected, and leave no trace of their presence behind them. In one instance only, which lately fell under our notice, there was superficial sphacelus of the skin, with sloughing, extreme exhaustion, and a fatal termination of the case but these bad symptoms occurred only as the consequence of mismanagement. A second instance of death from ekzema in an infant is all that we can remember to have met with; and there also mismanagement was the causa vera of the misfortune.

When it is remembered that not only the outer skin, but also the mucous membrane, is very commonly affected in ekzema, and especially the mucous membrane of the lungs, it is matter of surprise that a fatal termination of the disease is so very rare. We have seen this combination several times fatal in the adult, but in such cases bronchitis and pneumonia were the more frequent cause of death. But although we can speak hopefully of ekzema in regard to the ultimate result, there are several points in its history that mark it as an inveterate disease, and often a life-long torment. When it owes its existence to a diathesis, and is developed in infancy, it is wont to interfere very seriously with the nutritive functions of the skin. The skin is apt to become dry and hard and harsh, susceptible of irritation from trivial causes; the normal secretions of the skin are more or less suspended or arrested; the cuticle is unsound, and that state of the integument is engendered which we have *termed xeroderma*, a first stage of ichthyosis.

Like all diseases of the catarrhal class, ekzema is prone to be very chronic as to its duration; it drags its weary length slowly along; it is apt to become a habit; and from the presence of itching as a leading symptom, two of the most active of the causes of the disease, namely, friction and scratching, are perpetually in operation in keeping up the disease. Another of the phenomena of ekzema, a tendency to recurrence, is also to be borne in mind in drawing our prognostic of its issue. Ekzema is apt to recur annually, for example, in the winter or the summer of the year; sometimes twice in the year, as in the spring and at the fall; and at other times at periods of several years. Again, its association with a mal-assimilative diathesis, such as gout or rheumatism, would very much influence our decision; or its connection with some chronic and permanent disease of the local class, such as varicose veins. But possibly ekzema is, under no circumstances, more inveterate, next to its diathetic origin, than when it is associated with a weak and irritable nervous system - for example, in that group of the affection which we have distinguished as neurotic ekzemata.

In conclusion, looking to the many causes which contribute to render ekzema a more than usually chronic and inveterate affection; and, taking into consideration the circumstance that it is necessarily a disease of tardy movement towards cure, prone to repeated and vexatious exacerbations and relapse, we may venture to deliver the general verdict—that ekzema is not dangerous to life, that it is always susceptible of mitigation, and generally admits of permanent cure.

The LOCAL TREATMENT OF EKZEMA may be summed up in a few comprehensive words:—*allay irritation, and restore the weakened tissues to the normal standard of health.* The most complete mode of allaying irritation is to exclude the atmospherical air without interference with the transpiration of the skin. The method of restoration of the skin to its normal health, is by the judicious use of stimulant remedies. Stimulants, you will remember, when administered internally are termed tonics, so that the external treatment which we propose for the corroboration of the tissues of the skin, is eminently *tonic.*

Daniel Turner, the first of English dermopathologists, left behind him a reputation for his *unguentum de lapide calaminare*, the famous Turner's cerate; and we hope to be able to leave behind us an equal reputation for the benzoated ointment of oxide of zinc; at last, and apparently with some reluctance, provided with a place in the British Pharmacopœia, upon whose pages it sheds unwonted lustre. Now, the oxide of zinc ointment, properly benzoated, and made of pure materials, pure oxide of zinc and pure lard, is the most perfect local application for ekzema at present known; and indeed, is so perfect, that we doubt the possibility of its ever being exceeded. It is suitable for every form and every stage of the disease, but most of all for the dry forms; and it should be applied in a two-fold manner, namely, in substance with the point of the finger, or a thin spatula, or the knife, so as to distribute it uniformly over the diseased surface, [illegible]

It may be laid down as an axiom of cutaneous medicine, that ekzema, in its active stages, should never be washed; one of the first instructions which you give to the mother of an infant suffering under ekzema infantile is to avoid washing the eruption; discharges may be absorbed by a soft napkin, adjacent surfaces may be wiped with a similar material, dirty ointment or loosened crusts may be lightly brushed away; but for the nonce no water should be employed. Your aim should be to preserve the inflamed surface as tranquil as possible: to give Nature, of whom medicine is only the handmaiden—perhaps we may be permitted to say the maid-of-all-work, since it seems to be the fashion of the day to discountenance the special investigation of disease—to give Nature the opportunity of accomplishing her cure after her own fashion, and without unmannerly restraint. We have said that the office of the zinc ointment is to sheathe and protect the morbid surface; but it performs another and very important function, namely, that of creating an artificial layer, to take the place, for the time being, of the lost cuticle; and this concretion of the ointment should be studiously promoted by applying fresh and fresh ointment as often as that previously applied has become dried up, or has been accidentally wiped away. A scab or thin crust—not such a crust as would detain secretions on the part, and be a source of offence—is Nature's "court-plaster," that we must learn in good time to respect. Officious Physic and meddlesome Surgery, are two very mischievous and dangerous allies.

We say again and again, and then over again, that the local treatment of ekzema, in its more active and therefore most troublesome stages, requires no other remedy than the benzoated oxide of zinc ointment, and that by the use of the oxide of zinc ointment alone the first of the indications of treatment of ekzema will be accomplished, namely that of *allaying irritation*. But you *must* be provided with a good article, and you *must* learn to know its use. We will now pass on to another consideration, also of much importance. When your dressings are properly applied, and adjusted with nicety, they should remain undisturbed for as long a period as possible,—say for twenty-four hours, or even longer. But here you will find a difficulty in the management of infants; their habitual restlessness will disturb dressings, will rub off the ointment, and it will require patience to replace them; but there is no alternative, the thing *must be done*, and you must bring all your inventive faculty to bear upon the problem. But we may mention in this place that there are two regions of the body where the oxide of zinc ointment is unsuitable, namely, on the eyelids; for in that situation, getting upon the conjunctiva, it creates irritation and gives pain; and on the scalp, where it would tend to mat the hair together, and prevent a necessary condition in the treatment of ekzema, namely, perfect cleanliness. In both these situations you should substitute the nitric oxide of mercury ointment for the zinc ointment, diluted in the proportion of one part to three of benzoated lard.

In the transitional and passive periods of ekzema, there is one symptom that is extremely troublesome, and that will demand all your ingenuity and care to mitigate, namely, pruritus; and pruritus is associated with a greater or lesser degree of infiltration of the skin, that we must use our best exertions to disperse. In fact, the pruritus, in a majority of instances, is a consequence of the infiltration, and therefore a radical treatment points to the necessity of removing the objective rather than the subjective, of the cause rather than the effect. When pruritus is a neurotic phenomenon, our best palliatives are, hydrocyanic acid and tar; when it depends on dryness and desquamation, the benzoated oxide of zinc ointment or a borax lotion may suffice; but for infiltration in various degrees, stimulant applications are necessary, ranging in strength from the mildest up to the strongest.

As an antipruritic, the lotion of emulsion of bitter almonds, twenty or thirty kernels to six ounces of water; dilute hydrocyanic acid, two drachms; and spirit of wine, fourteen drachms, is an admirable one, cooling and soothing at the same time. Sometimes borax may be made to take the place of the hydrocyanic acid, and the spirit of wine omitted; or the original lotion may be rendered stimulant by the addition of the perchloride of mercury, from one to *two grains to the ounce*. But this, *in limine*, with regard to the use of lotions;

however agreeable they may be for the moment, they are all, unless they contain oil or glycerine, apt to leave behind them a certain degree of dryness or perhaps add to the dryness they were intended to mitigate, for dryness of itself may be an incidental cause of pruritus. Hence, conjointly with the lotion, we recommend a smear of the oxide of zinc ointment or one of the milder stimulant ointments; that is to say, that as soon as the lotion is dried, a smear with the ointment should follow.

Borax is an anti-pruritic when it is combined with oil or glycerine so as to form an emulsion; thus, two drachms of borax, with six of benzoated oil or glycerine, and seven ounces of emulsion of bitter almonds, form an elegant and useful lotion; but glycerine is uncertain in its operation on the integument, and is sometimes, instead of being a sedative, an irritant to the skin. Our antipruritic resources are, as you will perceive, very limited; sometimes a solution of carbonate of soda, two drachms to the eight ounces: or of carbonate of ammonia of the same strength in camphor of julep, is very soothing; or, tincture of opium with spirit of wine and camphor mixture; and sometimes we shall derive advantage from a lotion of sulphuret of potassium; or a diluted aconite liniment.

But a more potent antipruritic remedy, although at the same time stimulant, is to be met with in tar, with its hydrocarbon extracts, carbolic acid and creosote. And we have nothing more competent to quell a raging pruritus than Hebra's famous lotion, composed of oleum picis juniperi, sapo mollis, and alcohol, of each an ounce, diluted more or less considerably with water, a pint or even half-pint. Carbolic acid and creosote may be combined with distilled vinegar or glycerine, and used in a diluted form, one or two drachms to the half-pint; or with oil in various degrees of concentration.

We have shown you how you should deal with the inflammatory or active stage of ekzema; how you should meet the requirements of pruritus proceeding from nerve-irritation and dryness; there are two other morbid conditions which we have now to mention,—namely, infiltration giving rise to condensation and thickening, and nervous irritability. In moderate states of infiltration, the milder forms of stimulant remedies will be found sufficient; such as the nitric oxide of mercury ointment, diluted or pure; the citrine ointment, diluted or pure: or the ointments of tar and creosote. These remedies should either be well rubbed into the affected skin morning or night; or, the latter should first of all be well washed with the juniper tar soap, and then the ointments should be used.

The natural history of ekzema teaches us that severe pruritus generally precedes the excretion of a copius exudation from the skin, and that the exudation at once relieves the itching; this principle has been taken advantage of by Hebra, for the purpose of furnishing an additional remedy and an additional means of treatment; in a word, a remedy, which by application to the thickened and condensed skin, shall cause the infiltrated fluids to be poured out upon the surface in the same way that nature performs the act in the ekzema ichorosum. The remedy which Hebra recommends is the potassa fusa variously diluted, according to the effect that is intended to be produced. Very commonly he uses a solution of equal quantities of caustic potash and water, and we have pursued the same practice with infinite advantage; in fact it may be truly said that some of the more condensed and hardened forms of ekzema will yield to no other means. The solution is painted on the surface by means of a sponge brush; the viscous ichor is seen to ooze forth from the thickened skin even in a few seconds; the bloated tissue cells are made to disgorge their excessive contents; and in a few minutes one of the most passive and inveterate forms of the affection is transformed into an active stage, and becomes amenable to the milder principle of treatment applicable to the inflammatory condition of the disease.

If there be one thing that distinguishes ekzema more than another, it is nervous irritability—a condition easily understood when we remember that ekzema is an inflammation of a part of the body abounding in nerves, and that the papillary stratum of the derma is a stroma composed almost entirely of a capillary rete and nerve plexuses. To this special organisation are to be referred the teasing and violent pruritus that accompanies this affection; its sympathies with states of the economy; its exacerbations; its sometimes frenzied torments; and its not unfrequent intolerance of every remedy that may be proposed for its relief. We have evidence that such is the case by the comfort which is often given by an application which a few days before drove the patient distracted, and by the pain and distress frequently caused by the most soothing remedies, and, first among these, by the oxide of zinc ointment. When this state of nervous irritability prevails (and it may be present in various degrees from the slightest up to the most confirmed)—when every known application creates pain or awakens dread and alarm—our only resource, but a most valuable one, is nitrate of silver, in solution, of various strength, from two grains to the ounce up to a drachm, and dissolved, as the case may be, in distilled water or in nitric æther. Such a solution painted over an inflamed and irritable surface, acts like a charm; from bearing nothing the ekzema will bear everything; and a dressing with the zinc ointment becomes its greatest solace.

There are few medicines of a tonic character that come to our aid in the treatment of infants and children suffering under ekzema, beyond cod-liver oil, wine of iron, phosphate of iron, and arsenic. As age advances into youth we have the further help of vegetable bitters, of the mineral acids, and quinine; and in adult life the field of tonics expands somewhat more: there are the citrate of iron and quinine, strychnine, and phosphoric acid; and at the head of all *facile princeps* stands arsenic, of which the British Pharmacopœia affords a copious variety of forms—arsenic with potash, arsenic with soda, and arsenic with hydrochloric acid. There is one preparation of arsenic that you will never want in the treatment of ekzema, and we caution you to avoid it, namely, the triple solution of Donovan, the liquor hydriodatis, hydrargyri, et arsenici.

The form of arsenic to be selected in your treatment is of very secondary importance; you may take the potash solution of Fowler, the soda solution of Pearson, or the acid solution of de Valangin. Now that the British Pharmacopœia has equalised the strength of liquor arsenicalis and of the acid solution, the dose of these two preparations will be the same; the liquor sodæ arseniatis of Pearson being somewhat weaker. You will, however, find an advantage in departing from the formula of the British Pharmacopœia by omitting the tincture of lavender, the flavour of which is generally disagreeable to the patient, and the more so, as he is ordered to take the medicine with his meals. We have always advocated small doses of arsenic, and in a long practice we have seen no reason to depart from that principle; but we have no hesitation in prescribing it for infants of a few weeks old. It is a medicine which seems almost expressly made for them, it answers so well; and in a short time after taking it, the improvement in their condition and nutritive power is often very remarkable.

The dose of the arsenical solution for the infant is one or two minims three times a day; and for the adult, three or four minims. We make a distinction between a tonic dose of arsenic, which we believe should be as small as is here directed, and an alterative dose as required for lepra, which may mount up to five or six minims. But we have a good deal to learn yet with regard to the therapeutical properties of arsenic.—*Journal of Cutaneous Medicine, July and Oct.*, 1869, *pp.* 105, 217.

76.—ON THE NATURE AND CLASSIFICATION OF EKZEMA.

By J. L. Milton, Esq., Surgeon to St. John's Hospital for Diseases of the Skin.

[In the majority of cases at any rate ekzema is not a vesicular disease at all. The elementary lesion may be an erythema, a vesicle, a papule, or a pustule.]

It simply requires that surgeons should judge for themselves in order to be convinced that true ekzema is not vesicular at any period of its course. It was not without considerable diffidence that I first hazarded this statement, standing, as I then thought I stood, quite alone in this view. Having, however. suffered from this complaint, I had on numerous occasions watched the development of the morbid process hour by hour from the very beginning, and had long ago satisfied myself that there was no real foundation for the opinion so very generally entertained. Being unwilling, however, to rely exclusively upon my own case, I examined a great many patients of all ages with a good lens, and wrote down the observations as they were made, but I looked in vain for the vesicle of ekzema. I found, it is true, vesicles enough, *but none which passed into an ekzematous surface.* Again, on reading a paper in the Medico-Chirurgical Review in which ekzema was mentioned, I repeated these observations with all the care I could, but with the same results. Some circumstances were, however, noticed which probably contribute to support the view so generally taught.

1. The first is, that when the discharge comes from a part furnished with hair, as the leg for instance, minute accumulations of fluid form at the junction of the hair with the skin. These are possibly considered as vesicles—M. Devergie, for instance, seems to take this view;—but on more close scrutiny it will be found that *neither their course, situation, nor form corresponded* with those of a true vesicle, and on touching one of them *gently* with a blunt-pointed glass rod, a minute drop of serum will be found adhering to it. I have always failed to detect the slightest trace of cuticle on these little drops of fluid; certainly, if there were any, the pressure was much too slight to break it, whereas we know that the covering of vesicles will resist some force. When M. Devergie speaks of the fleeting nature of the vesicles of ekzema, he overlooks the fact that genuine vesicles are not very fleeting even in such transient disorders as miliaria, and that those of herpes, with which he classes ekzema, not only bear such distension as to become globular without bursting, but endure the friction of the clothes for days without rupture. Again, herpes may reappear for a long series of years without a single patch becoming ekzematous; ekzema, so far as I have been able to observe, never becomes herpetic, nor have I ever seen an outbreak of vesicles on a patch of ekzema. At times large patches of skin become covered with ill-developed vesicles, looking as if they would become ekzematous. I have never seen them do so, but I do not impugn the accuracy of those who say they have; they sometimes complicate or accompany genuine ekzema, but if the latter complaint continue ever so long, or reappear ever so often, they do not make their appearance again. And these facts are, I submit, strong grounds for believing *that there is a radical and unalterable difference between ekzema and herpes, the papule and vesicle.*

2. The second circumstance is, that in the vicinity of ekzematous patches, vesicles and even bullæ are occasionally found; the former not unfrequently appear about the knuckles or back of the hand. These vesicles, however, last but a very short time, and in most of the cases I have seen they did not return after being once removed; in a few instances they did. No connection seemed to exist between the number of attacks of this kind of complication and of the outbreaks of ekzema. One patient, who had had ekzema continually breaking out for years, had never suffered from vesicles; another, under the same circumstances, had had five or six attacks; in another case I was informed that each eruption of ekzema had appeared in this way. So far, however, as my own observation goes, I never saw it more than twice in the same patient. This eruption seems in no way dependent on the state of the ekzema; it will disappear when the latter complaint is stationary or getting worse. In all the cases I ever saw, the vesicles were rare in proportion to the numbers and extent of the ekzematous patches; a patient might have thirty or forty of these, and yet only one near which there were vesicles. These vesicles always healed quickly and did not become ekzematous, and the disease in their immediate neighbourhood remained uninfluenced both by their outbreak and their departure; sometimes appearing afterwards in its usual form on the very spot where vesicular eruption had been,—a still stronger proof, it seems to me, than any of the foregoing, that there is a radical, unalterable difference between the vesicular and ekzematous inflammations.

3. The third reason is, that a disorder which seems to me to be a form of

herpes has been confounded with acute ekzema. It begins with heat, severe itching, and pungent, stinging pains. Vivid red patches form and serum is effused under the cuticle, which is raised up in firm irregular vesicles; then the serum becomes of a whitish hue and grows turbid; the vesicles break, the fluid oozes out, the cuticle is next thrown off, leaving the skin red and tender, and the disease passes away, mostly, I believe, to return no more. In still more severe cases numbers of little pustules form round about them, constituting really an impetiginous herpes. Now this complaint, seen when the cuticle has just given way and when the serum is pouring out freely, might be taken for ekzema. But except that the vesicles run into a mass instead of remaining separate, I see nothing that distinguishes this complaint from herpes zoster; it never tends to take on the one essential character of ekzema, that of discharging serum for an indefinite period of time; it disappears almost, if not quite, as fast when nothing is done as when it is actively treated; the vesicles are firm, and only break when the fluid has became turbid and flaky. At the end of two months' duration of the disease in a chronic form I have seen some of them still full of fluid; how long they had lasted it was of course impossible to say, as the accounts given by patients or their friends of any particular vesicle, to which very probably their attention has never been previously directed, were not likely to be very connected or reliable. But the very fact of their continuing to exist under any circumstances proves that the tendency to form vesicles continues in these cases, *and this we certainly do not find in ekzema.*

On every ground of analogy as to anatomical and pathological features, course, and cause, ekzema solare, ekzema mercuriale, vesicular eruptions of the hands in bakers, confectioners, &c., and vesicular scabies ought, I think, to be referred to this variety, and the whole subdivision classified with herpes, of which they are only forms. They are simply instances of blistering induced by heat or some other irritant, and no more ekzema than blistering with cantharides or boiling water would be. There is, however, one form of solar ekzema, which might be mistaken for genuine ekzema. It is that affection in which a large portion of skin in an exposed part, as the back of the neck, is steadily invaded by a crop of vesicles which gradually turn flaky and yellow. It is very slow and will last a long time. I have seen cases in which it had not altered materially during two months. It is not always due to extreme heat. In children, during cold, dry east winds in spring, the vicinity of patches of dry ekzema will sometimes be invaded by vesicles in considerable numbers. For the most part these may be referred to the same variety. Ekzema mercuriale I have never seen in the vesicular stage, but I think, from the descriptions given, that it clearly belongs to this group, and that it is manifestly herpetic. The very course which it runs proves it to be different from pure ekzema. It generally yields promptly if merely let alone or under any simple treatment, and shows no tendency to come back again and again, which cannot be said of ekzema. It is true this arrangement is quite antagonistic to all established views, and clashes with the pathology of Plumbe and Willan; but the fact is that the ekzema of Plumbe simply embraces the ekzema solare and mercuriale; *he never alludes to the severe affection nowadays called ekzema as being a form of that complaint.* Any confusion, therefore, likely to ensue from the change I have proposed is due, not to any desire of introducing novelty on my part, but to the fact *that what we recognize as ekzema was certainly not recognized as such by Plumbe.*

The chronic form of ekzema, in the vast majority of cases, begins as an eruption of papules; in rarer instances, as an erythema or pityriasis. These may therefore, for the present, be laid aside, in order to examine acute ekzema which we might expect to find more closely connected, if any form of ekzema can be connected, with vesicular disease; but the more narrowly we scrutinize it, the more certain does the conviction become that its course and symptoms ally it to an acute erythema or erysipelas, or that form of inflammation described by Wilson as scalled head. In this affection a large portion of skin, as the forehead for instance, becomes red, swelled, glazed, and stiff. This is followed by disquamation of the cuticle and the formation of moist scales, or even crusts; or there may be a slight, though decided weeping, as is often the case when the complaint attacks the lower part of the leg. Now, an observer bent on finding out the truth, and not on merely supporting a theory, may see this over and over again in several persons, or several times in the same person, without ever finding a vesicle. I attended a gentleman for this complaint who was a good deal alarmed about it, as an intimate friend of his had been quite a martyr to ekzema; for eighteen months the patient seldom passed any great length of time without an outbreak on the face, yet on no occasion could either he or I detect a single vesicle.

Nature of Morbid Process in Ekzema.—The following appears to be the process which ensues in all cases of a truly ekzematous nature. A portion of skin becomes red, inflamed and uneasy, stiff and itching, but rarely swollen, except when the complaint attacks the ear. The cuticle rapidly dies, and is cast off or torn off by scratching. To this succeeds a discharge of serum, which seems to be poured out by the sudoriparous ducts. M. Rayer says "the follicles of the skin" are the parts essentially affected. Under this term he includes, I presume, the sebaceous ducts; but unless my observations have misled me, there is no proof that they are actually concerned in secreting the serum poured out in such cases, although it seems difficult to understand how they can escape being involved to a certain extent. When the process is slower, the falling off of the epidermis is succeeded by a cuticle thicker and coarser in its texture, and gradually assuming the look of a soft scale. For the most part the redness starts from several points, or papulæ, which are sometimes almost as pointed as those of leichen, sometimes not raised above the level of the skin. These may spread very slowly, or they may grow so rapidly as to coalesce within twelve hours. It often happens that a small spot will inflame, and, without becoming either a pustule or a vesicle, will desquamate and secrete a crust which looks very like impetigo; and if the patient be seen in this state it may be taken for such. But it is ekzema; and, though it may pass away and never be known as such, future observation will verify what I state. This variety, too, may be complicated by pustules, and the combination of these two perhaps most frequently constitutes the affection called impetiginoid ekzema, although the term really embraces every form of ekzema complicated by pustules, and they may attend any severe case of ekzema. Again, the serum, instead of being of its ordinary consistence, may be almost purulent in character. In some cases of old standing ekzema the eruption, even at a very early period, particularly when seated on the backs of the hands and wrists, presents the appearance of numerous minute, detached, low elevations of thickened red skin, partly denuded of all covering, and partly covered by discoloured but firmly attached cuticle, and sometimes indented so as to assume a cup-like form. Their appearance at this stage would scarcely show them to be ekzema, but when torn or rubbed, and often in a short time spontaneously, their character is established by a discharge of serum, though this is seldom abundant; indeed, I believe the appearances just spoken of indicate a declining state of the disease.

In some few inveterate cases I have seen this indented irregular state of the skin so strongly marked on the head and hands that I have been tempted to ask myself whether favus is not a localised form of this affection in a bad constitution, especially as it is possible, by keeping the crusts on a patch of ekzema moist a considerable time, to induce a smell very like that which distinguishes favus. I do not allude to that rare form of the disease which begins with an eruption of pustules, and which I have never seen, but to favus as ordinarily met with. In all the instances where I have been able to trace the progress of the diseased action, it was, though much slower, essentially the same as in ekzema; that is to say, it really consisted of inflammation and redness of the skin and death and removal of the cuticle, followed by the formation of crusts. The reader will say that the presence of the parasite constitutes a distinction so strong that there can only be analogy, there can be no community between the two, no passing of favus into ekzema. But it is admitted that without a peculiar fitness of the soil the parasite cannot flourish at all, and there is something peculiar in favus. It is not a mere result of want, darkness, scrofula, dirt, or contagion, even if the latter be a factor, and its value is very doubtful, or of any conjunction of these causes, otherwise it would be common instead of being extremely rare. Then there must be a variety of constitution—a variety which, peculiarly and alone, yields the proper soil for receiving and fertilizing the said parasite, *and this variety may modify an ekzema.*

Divisions of Ekzema.—The question as to what extent ekzema is to be divided and subdivided I leave to others. I should be inclined to admit no divisions, except the simple and convenient one of acute and chronic, with the addition of, perhaps, ekzema impetiginodes. Papular and red ekzema are simply different degrees of severity in the same affection; ekzema solare I would reject altogether, as I would any vesicular disease. I venture to suggest, too, that ekzema should be entirely removed from the vesiculæ, and either be made to form an order apart, or, for convenience-sake, be relegated to the order of papulæ. I say for convenience-sake, because it evidently does not always begin as a papule, the starting-point being a form of inflammation of the skin closely allied to impetigo in some cases, to erythema in others, and to pityriasis in a third set of cases. But I would extend it so as to let it embrace some disorders which are at present otherwise classified.

And first, for reasons now to be mentioned, I think we might include under the head of ekzema an exceedingly obstinate affection attacking the leg, and running into ulceration; a complaint generally seen in persons of middle age and advanced life. On as good grounds as have often been urged for giving a name, this variety might be called ulcerative ekzema; but as I have no wish to introduce any new terms, I shall confine myself to noticing it simply as a variety of ekzema, the variation being, I think, *due solely to its attacking a part peculiarly liable to ulcerate.*

It is attended by all the signs of an acute but local attack of ekzema, and perhaps in no part of the frame is this malady more distressing than when it fixes on the lower part of the leg; the pain, heat, and itching tormenting the patient almost incessantly, especially at night. In very severe cases one or more spots will rapidly pass into ulceration; indeed this seems the natural termination of the attack, and there is often some mitigation of the symptoms when it has ensued. This ulceration is very refractory, often requiring months to cure, even under the most careful treatment. It is peculiarly this stage which seems to stand so far apart from ekzema, owing to the fact that a large proportion of patients suffering under the complaint are never seen by the surgeon till it has reached this epoch. I have, however, repeatedly traced it from ekzema. In other cases the orifices of the sudoriparous and probably of the sebaceous ducts become so large that they can be easily seen.

It does not in any way follow from all this that ulceration of the leg or ankle is always due to ekzema; many ulcers are free from any complication of this kind, the skin around being never more than merely red and tender, while ekzema may run its course without being complicated by ulcer, but assuredly out of a given number of cases of ulcer complicated by ekzema, a certain proportion begin with the latter complaint; how many I am not prepared to say, but, judging from the entries in the case-book of St. John's, the numbers are pretty evenly balanced. Perhaps, as a rule, it will be found that when the ulcer is seated about either malleolus it is the first in order, and when higher up the leg, especially if it be superficial, that ekzema or erysipelas was the first to appear; but I do not bring this forward in any way as an established fact.

Occasionally a patch of old superficially ulcerated ekzema is seen on the ankle, covered with a crust almost like dried gruel in colour and appearance, or even like nail or horn. The crust is naturally quite insensible, and not always calculated to reveal the nature of the affection, but if it be removed by macerating it for some time in solution of carbonate of soda, and covering it with oiled silk, the skin beneath is found to be affected with the ulcerative form of ekzema just described, being red or purplish, painful, and superficially ulcerated. These patients are generally in an infirm state of health; most of *those I had seen had* suffered from bronchitis. The process here is very closely allied to the obstinate purplish discoloration of the lower part of the leg, caused in many cases by ekzema.

In the forty-sixth volume of the Transactions of the Medico-Chirurgical Society Dr. Ogle describes two cases of what is called spurious or sebaceous ichthyosis. The patients were two girls, sisters, and the symptoms consisted of a slow formation of hard crusts, much like what I have described, seated on the lower part of the leg and foot; when these were removed the skin beneath was found to be red, glazed, and disposed to crack. Under the microscope the scales seemed to consist of layers of epithelium, with some round and reddish-coloured solid-looking bodies, along with numbers of old and evidently worn-out epithelial cells. Now, I think, were this affection removed from ichthyosis and added to ekzema or favus, it would be a step in the right direction. It is not ichthyosis, and has nothing in common with it, while it has a very great deal in common with favus. The skin beneath the crusts is found in the same state as when those of old-standing ekzema or favus are removed, and the crust seems to form in the same way; that is to say, a small patch of skin slowly inflames, the cuticle dies, and is thrown off, and a crust is slowly formed. In one case which I examined with great care this seemed to me clearly the process which took place. I have only seen one instance of it in 15,000 cases of cutaneous disease, and in that instance the crusts appeared to form in the way I speak of. The patient here also was a young girl, and the disease was seated on the legs, there being some scores of these spots on each limb, giving them a most singular appearance. It is true the secretion of ekzema, when microscopically examined, is different from what was seen in Dr. Ogle's cases, consisting generally, when hardened into crusts, of layers of albumen or lymph, mixed with a few blood-discs or globules; but this may have been due to the disease having penetrated more deeply into the ducts of the sebaceous glands than ekzema usually does.

In the paper spoken of above I stated my reasons for believing that both pityriasis and tinea circinata occasionally form starting-points of ekzema. Pityriasis rubra is indeed, so far as I have been able to observe, an undeveloped ekzema, and, along with that rare affection known as red general pityriasis, ought, I think, to be referred to ekzema altogether. But tinea circinata will certainly also pass into ekzema, though under what circumstances of health and constitution this transformation takes place I have been quite unable to determine. Sometimes it is seen in healthy children, or again the very reverse may be met with. In the first instance of this which I ever observed, three children of the same family were placed under my care for impetigo, principally affecting the scalp. The eldest of these children, a boy, and the youngest, a girl, suffered only slightly; the second, a boy, had it in a very severe form. A considerable time afterwards two children came to stay with this family for some little while. They were both suffering from tinea circinata. Whether as a coincidence or a result I know not, but the fact is certain that the other three children were very shortly also affected with ringworm. The younger boy, who had suffered so severely from impetigo, displayed here a similar peculiarity, for one large patch became strictly ekzematous, discharging serum very freely, while no symptom of the kind was seen in either of the others. Yet this boy was far the healthiest and strongest of the three. In another case, in which six young ladies, sisters, were affected with tinea, several of the patches in two of the patients turned to obstinate ekzema; yet there was no perceptible difference of constitution among these girls, nor have subsequent observations thrown any more light upon this point.—*Journal of Cutaneous Medicine, July*, 1869, *p.* 140.

77.—FLEXIBLE COLLODION AS AN APPLICATION IN HERPES ZOSTER.

By the Editor of the Dublin Quarterly Journal.

[In a review of a recent work on diseases of the skin the Editor of the Dublin Quarterly Journal remarks:]

We are surprised to find that the author makes no allusion to the value of flexible collodion as a protecting agent in herpes zoster. In the numerous cases which occurred last summer and autumn, we found the greatest advantage to result from the immediate painting the vesicated patches with the collodion, and repeating the same as often as required. It is the cleanest and most effectual means of preventing the rupture of the vesicles, and we can warmly recommend it even in cases where superficial ulceration has taken place.—*Dublin Quarterly Journal*, 1869, *p.* 396.

78.—THE TREATMENT OF IN-GROWING TOE-NAIL.

This painful affection is often a source of great worry to the medical attendant, as it is always a misery to the unfortunate patient. Our readers will be glad to know what kind of treatment is found best in the large experience of the metropolitan hospitals. We are pleased, therefore, to have the opportunity of laying before them notes upon the subject from five well-known hospital surgeons, whose opinions will be read with interest and instruction.

King's College Hospital.—In slight cases of in-growing toe-nail, an affection which in the great majority of instances has its seat in the great toe only, and is caused by the lateral compression of the toe by the boot, Mr. Wood scrapes down the nail on the affected side until it is thin and yielding, like paper. The thickened skin overlapping the nail is then pared off with a sharp thin-bladed knife until it is close down to the raw, but not so far as to draw blood. A pointed stick of the nitrate of silver is then applied lightly to the painful ulcerated chink, and a small piece of lint, rolled up so as to fit into the groove of the nail, is dipped in glycerine and applied by means of a thin strip of adhesive plaster or small india-rubber band.

In cases where the mischief is the result of hypertrophy of the thick skin forming the lateral margin of the groove, and without any deformity in the shape or thickness of the nail itself, Mr. Wood pares off skin, under ether spray, to a level with the nail, and then applies the pressure as before by means of a small roll of lint. If the toe-nail itself be broad, distorted, irregular, and bent laterally by the pressure, the best plan is to remove a triangular portion of the nail itself in the middle line, the angle reaching down to the centre of the nail. This allows the nail to fold up and accommodate itself to the limited space without digging in at the edges.

But if there be much ulceration, irritation, and distorted growth at the matrix of the nail itself—which in long-continued cases, and in scrofulous or syphilitic conditions of the system, is sure, sooner or later, to ensue,—the only plan from which effective relief can be obtained is by the time-honoured but excruciating process of division into the quick, down the nail itself at the inner third, and evulsion of the affected part of the lunula from the matrix. In doing so, it is important to get all that part of the root away entire, as a small portion growing up with irregular angle will cause a speedy return of the disease. In all cases it is important also to regulate and ease the boot, during the renovation of the nail, that the skin should not again overlap and be forced down upon the edge, which always induces a return of the disease.

St. Mary's Hospital.—Mr. Norton never performs any operation in the treatment of in-growing nails. He applies, in the following manner, a solution of liquor potassæ (two drachms to one ounce). A piece of cotton wool is saturated with the solution, and pressed gently down between the upper surface of the nail and the soft tissues, which latter are usually in the form of a fungous mass of granulations. The solution permeates the substance of the nail, and softens and pulpifies the superficial cells. The wool is kept continually moist with the lotion, and the softened nail-tissue is wiped away each morning. The nail in a few days becomes thin and flexible, and, if desired, can be pared away without pain, or it may be allowed to remain for a few days longer, when it becomes entirely removed by the solution. Mr. Norton considers it most essential in the treatment that the lotion be continued until all ulceration has disappeared, otherwise the too early hardening of the epithelium becomes again a source of irritation, and promotes a return of the disease, or rather prevents a cure from being effected.

Of the several cases treated by this method during the past two years, one of whom suffered from in-growing nails on both great and both second toes, not one patient has returned to the hospital, and, therefore, Mr. Norton believes that in no case has there been a recurrence of the affection.

St. Thomas's Hospital.—Mr. Croft finds that, commonly, patients suffering from this disease do not come under his notice until the affection has been some time in progress. In such cases it is his practice to adopt the radical cure advocated by Dupuytren, which is to divide the nail lengthways, and turn out the in-growing half of the nail. In all but the hardiest patients he employs the ether spray to benumb the toe. He prefers to cut down the centre of the nail with a strong short scalpel, and then to raise the half-nail to be removed, by forceps (using the latter as a wedge), before plucking it from the matrix. In other cases he slits up the nail with scissors. He prefers this radical plan of treatment in advanced cases, because it saves the time of both the patient and surgeon, and because other plans include, besides time, frequent skilled dressings, of which poor people are rarely capable. In an early stage, Mr. Croft cuts out the in-growing corner of the nail, cauterises the granulations deeply with nitrate of silver, places a small pad of lint on the cauterised spot, and then, by means of a long narrow strip of plaster winding round the toe from the unaffected side, fixes the pad firmly in its place, at the same time directing its pressure *from* the nail. Under this treatment, well carried out, he finds cicatrisation soon takes place. Absolute rest is enjoined. The nail requires to be kept carefully trimmed.

Mr. Croft has just cured, by the radical plan, the brother of a girl who had suffered from in-growing nail in both great toes. The second toe became affected some months after the first had been cured.

University College Hospital.—Mr. Christopher Heath has never seen any good result from paring the centre of the nail, or applying caustic to the exuberent granulations overlying its margins. He has always found the simplest and most satisfactory method of treatment to be to take a narrow slip of the nail away with the scissors and forceps, taking care to extract the whole depth of the nail, which is not always easy owing to the sodden condition in which the tissue has been kept for a length of time, by which it is rendered very friable. When the edge of nail thus extracted is examined, it almost always presents a rough serrated margin, and it is this which causes the irritation. After the removal of the source of irritation the use of careful dressing, with lint gently pressed down by the side of the nail, is necessary to repress the granulations, the use of a lotion of the nitrate of silver or sulphate of copper (two grains to the ounce) has been found very advantageous. Mr. Heath finds it necessary to warn patients who have suffered from in-growing nails to wear wide-toed boots, and to keep the sulcus between the nail and the flesh clear of epithelium. They should be careful also to apply for relief the moment they feel uneasiness from the nail, when a perfectly painless removal of a small portion of the nail prevents further mischief.

In inveterate cases, where the nail and toe are deformed, the former being very much in-curved, Mr. Heath recommends the removal of a slip of nail on each side, and the destruction of the corresponding portions of matrix, under chloroform, either by removal with the scalpel, or the application of the actual cautery. This lays the patient up for a few days, but effects a permanent cure. Mr. Heath believes that it is never necessary to remove the entire nail, by splitting and avulsion, as is often recommended.

Westminster Hospital.—Mr. Francis Mason has had under his observation at this hospital during the last few months an unusually large number of cases of in-growing toe-nail. Mr. Mason believes that the plan ordinarily recommended of cutting the toe-nails as we do the finger-nails—that is, of rounding their corners—often induces the condition it is intended to obviate. He has generally found that the so-called in-growing toe-nail has been primarily caused *by injury in trimming* the nail. Too much of the corners is removed, eight months, the leg getting smooth and healthy, and the ulcer slowly healing. In January, 1869, the constitutional effects of arsenic began for the first time to show themselves, and the dose was immediately reduced to five minims, and this she is now taking, the leg being well, and the ulcer at the end of a year being nearly healed and quite soft at the edges.

Another patient, a broken-down woman, aged 60, with bad ekzema of the leg and ulcers above the inner ankle, began taking liq. arsenicalis in five-minim doses thrice daily, on January 10th of this year. The dose was increased to eight minims on February 20th, and the skin around the ulcer being healthy, and the ulcer healing, quinine was substituted on May 1st. On July 3rd, however, it was manifest that the ulcer was not making progress, and that the skin was becoming scaly and red, and she therefore resumed the arsenic.

I have quoted these cases principally to show that feeble and elderly patients bear and do well under considerable doses of arsenic. I am convinced that the fear of producing toxic effects deters many practitioners from pushing this drug sufficiently far to produce the desired result. I have seen several instances of ulceration in various parts of the body where arsenic has been administered for a length of time without inducing healing, but in which a rapid cure resulted from pushing the dose as above recommended.—*Practitioner, Aug.*, 1869, *p.* 103.

SYPHILITIC AFFECTIONS.

81.—THE TREATMENT OF SYPHILIS BY THE HYPODERMIC INJECTION OF THE SALTS OF MERCURY.

By Dr. Thomas James Walker, Surgeon to the Peterborough Infirmary.

[The plan of administering bichloride of mercury by subcutaneous injection in cases of syphilis, was originated by Dr. Lewin, of Berlin. It has been employed by several of our continental brethren.]

Notwithstanding the opinion so strongly expressed by many eminent men against the use of mercury in syphilis, we find this remedy steadily holding its ground; and it is still regarded, not only by the vast majority of the medical profession, but also by the most experienced and most scientific of the specialists in this branch of medical science, as by far the most valuable remedy which we possess to combat the malady; and this fact is the more striking, since all admit the bad results which follow the abuse of the drug, and since, moreover, its administration is, as I believe, conducted by most practitioners on an entirely erroneous principle—that, I mean, which is inferred in the rule usually laid down that mercury, when administered for the cure of syphilis, should be given *until the gums are touched.*

The impression that the beneficial effect of mercury is not obtained until this so-called physiological effect is observed, and that, when this is observed, the full benefit of the drug has been derived, prevails, I believe, almost universally through the profession, and detracts most powerfully from the remedial value of the drug. The occurrence of salivation, or even tenderness of the gums, must be regarded as an accidental complication of the use of mercury, which is of importance only as being a thing to be avoided if possible, since the injury to health caused by salivation—that is, by the stomatitis, &c., produced by the use of mercury—is so great, that the disuse of the drug is indicated on the first indication of this complication. In administering mercury for the cure of syphilis, the object always should be to avert any affection of the mouth, or any other physiological action of the drug, the occurrence of which will necessitate our discontinuing the remedy before it has exerted its curative influence on the disease. The occurrence of tenderness of the gums and salivation is no criterion of the amount of mercury absorbed into the system, or of the remedial power of the drug; and it would be desirable generally, in cases where no precaution to prevent salivation is taken, *to continue the use of* mercury far longer than the occurrence of this complication admits of. It is a mere fortuitous circumstance, depending in a great measure on the state of the patient's mouth and gums, and upon other circumstances unconnected with the drug. The mercurial treatment should be continued until it has done its work with the disease: and the occurrence of any accident which necessitates its cessation, before this end is attained, should be avoided if possible. It was from Professor Sigmund, while following his *clinique* in Vienna, that I learnt how completely the occurrence of salivation might be avoided by diligent attendance to the cleanliness of the mouth, and by the constant use of alum. I usually direct my patients to carry a little piece in their pockets, and to suck it every hour or two for two or three minutes at a time. If patients pay strict attention to these directions, the occurrence of either tenderness of the gums or salivation is an exception to the general rule; and I have frequently, in obstinate cases of syphilis, been able to continue the rubbing in of mercurial ointment daily for months, and until every symptom has disappeared, without the occurrence of salivation, or even of tenderness of the gums.

I do not desire to enter here, however, into the question of the propriety of the mercurial treatment of syphilis: I assume that mercury is a proper remedy to use for the cure of syphilis. But I take the opportunity of pointing out what I consider the erroneous principle by which the administration of the drug is usually regulated, and at the same time to indicate what I consider the correct principle; viz., to administer the drug until the disease for which it is given is cured, and to avoid every complication which may necessitate the discontinuance of the remedy before this object is attained.

The method of administering mercury which enables us to cure the disease with the smallest quantity of the drug, and which at the same time is freest from the risk of the complications to be avoided, is the best. Hitherto, I have always been in the habit of using the mercurial inunction, guarded by the use of alum, as mentioned before. Doubtless, when the method is once brought before the notice of our associates, the plan will be subjected to more extensive experiment, furnishing more decided results. The preparation which I have used in the following cases is a solution of 5 grains of the bichloride in 250 minims of water, with 250 minims of glycerine. This mixture is of such a strength that 100 minims contain 1 grain of the bichloride; and of this I inject 10 minims, or one-tenth of a grain of the salt, and upwards. The injection almost always causes more or less pain, and usually, though not invariably, is followed by slight inflammation and exudation at the seat of puncture. In one case, this was sufficient to cause slight ulceration of the skin—a result which I attribute, however, in part to the fact that the injection was performed by an assistant, who states that, having had but little experience in the matter, and fearing to pass his needle too deep into the cellular tissue, he believes that he forced the injection actually into the tissues of the skin. The infiltration usually disappears in from three to six days. The dose has been repeated every second or third day in most cases; and the situations in which I have made the injection have been various, most frequently over the abdomen, occasionally in the cellular tissue of the arms or thigh. I have usually injected alternately on opposite sides; and I have certainly observed that the various forms of skin-affection, &c., disappear more rapidly in the immediate neighbourhood of the seat of puncture.

Dr. Zuelzer of Berlin has recently sent me a small pamphlet, forming the inaugural thesis of Dr. Adolf Gelber, in which the use of the kinate of mercury (*Chininsaure Quecksilberoxydul*) is recommended as the best salt of mercury to use for injection. It is readily soluble in water, and is, according to this author, less liable to give rise to pain, inflammation, or any other untoward complication, than any other preparation of mercury. The dose which he recommends is one-sixth of a grain.—*British Medical Journal, July* 10, 1869, *p.* 30.

82.—ON THE TREATMENT OF SYPHILIS.

By Dr. John Kent Spender, Surgeon to the Mineral Water Hospital, and to the Eastern Dispensary, Bath.

[At the conclusion of a paper on this subject, Dr. Spender recapitulates the therapeutic propositions advanced by him.]

1st. For the secondary forms of syphilis give, in the most eligible form, iodide of potassium in moderate doses, with blue pill or some analogous preparation.

2nd. The double compound of iodide of potassium and bichloride of mercury may be necessary for treating syphilitic inflammation of deeper tissues.

3rd. The bichloride of mercury is valuable for removing the intermediary squamous syphilides. The green iodide of mercury is recommended by Mr. Squire. In doubtful cases, bichloride of mercury may be added to arsenic.

4th. The earlier tertiary phenomena of syphilis are relieved by the double compound of iodine and mercury just named; the later ones by large doses of iodide of potassium. Sometimes even cures may be effected. Tonics are generally useful subordinate agents.

5th. Infantile syphilis always requires mercury.

And I may add that in otherwise intractable cases, the mercurial bath and the hypodermic method of introducing mercury into the system should be rendered available.—*Lancet, June* 26, 1869, *p.* 878.

83.—THE TREATMENT OF GONORRHŒA BY AN IMPROVED CONTINUOUS INJECTOR.

By —— Morgan, Esq., Surgeon to the Westmoreland Lock Hospital; Professor of Surgical and Descriptive Anatomy, R. C. S. I.

[The necessity of *deep* urethral injections is apparent when we know the pathology of gonorrhœa. In this disease the inflammation is not confined to the terminal portion of the urethra, but extending along the whole course of the canal up to the prostate. The fossa navicularis and the vicinity of the bulb are very liable to become diseased.]

I believe that the failure and uncertainty of most injections arises not so much from their composition as from their insufficient application and non-diffusion over the surface; and also that the frequent and large use of a diluted and weak injection is better than the more limited application of a stronger one. To carry out the latter object I have put together an arrangement for applying a diluted application to the deeper parts of the urethra, using the principle of the chemical "wash bottle" as the injecting force.

The injection-point is made rather abruptly tapered so as to plug the orifice with tolerable ease. The patient's hands are both left free, the one to hold up and support the penis, the other to introduce and keep steady the injection-point. The mouth-piece leading to the bottle is to be held between the teeth, and by blowing more or less energetically, a continuous injection can be attained. The more fully the injection-point is introduced, so as to fill the orifice, the more deeply will the application penetrate by the filling of the urethra. The bottle holds about two ounces, which I find the most convenient and useful quantity for use. In the acuter stages, great relief can be given by the use of this application in introducing sedative solutions, such as ʒ ss. vel. ʒ i. tinct. opii ad. ℥i. aquæ, or the ext. opii aquosi, gr. i. ad ℥ i. aquæ, which answers even better; the solution should be previously warmed by letting the bottle stand in hot water, and this may be used three or four times a day.

After the first few days I have found the bisulphite of lime solution (prepared by Medlock and Bailey) as the most useful medicament, adding, according to the sensations of the patient, ʒi. vel. ʒ ii. ad ℥ i. aquæ; it seems to *influence specially* the virulence and quantity of the discharge.

If any of the ordinary ingredients in use be preferred, such as sulphate of zinc, tannin, &c., they should be applied in very dilute form, chiefly to be regulated by the sensibility of the urethra and the feelings of the patient, as a large surface is brought under the influence of the application by the full and gentle distension of the urethra by this means.

In spermatorrhœa, also, I have found the application of a sedative solution of tinct. opii. ʒss. ad. ℥ i. aquæ, used night and morning, as most efficacious in allaying hypersensibility, unless in such rare and severe cases as require the application of strong local applications by the porte caustique, or sponge.—*Dublin Quarterly Journal*, *May*, 1869, *p.* 358.

84.—ON THE TREATMENT OF BUBOES AND THEIR SINUSES BY MEANS OF CARBOLIC ACID AND SMALL VERTICAL INCISIONS.

By Dr. J. **Lamprey**, Surgeon to the 67th Regt., Portsmouth.

[It appears from the report of the committee appointed to inquire into the pathology and treatment of venereal diseases in the army, in 1867, that there were 2011 cases of bubo admitted to hospital. The average duration of treatment was thirty-six days.]

The importance of a method which would expedite the cure of this disease, and at the same time save the patient the suffering from extensive incisions, cannot be over-estimated; and, however much beneath our notice such cases may appear at first sight, none reward the care and attention bestowed on their treatment with better results. A bubo which, under the old method of treatment, might take months to heal, may be cured in a few days by a more judicious mode. The importance of making the first incisions in a particular direction, always taking care that the bubo has well suppurated beforehand, is much greater than what it would appear to be. If it is made in a line parallel with Poupart's ligament every movement of the thigh will keep the edges of the wound in a constant state of motion; whereas if it is in a vertical direction the motion of the thigh will disturb the coaptation of the sides of the wound much less. This does not appear to be sufficiently dwelt upon in works on surgery, on the contrary, the recommendation of one of the ablest surgeons, in a work just published, is that the bubo should be laid open by a free incision throughout its longest diameter, either horizontal or vertical to Poupart's ligament. (*See* "Erichsen's Surgery.") Bumstead, in his work on syphilis, states that Langston Parkes, an American surgeon, treats buboes by opening them in several points and injecting sulphate of zinc, and using a compress; in every case he succeeds in making a cure in a few days. He punctures the bubo with a grooved needle, and takes care that the walls of the abscess are not too thin. From my own experience I prefer, for the reasons stated, a vertical incision in the centre of the suppurated gland, just sufficiently large to allow the free escape of the collected pus; and from the experience of repeated trials, I find that by injecting a solution of carbolic acid, diluted to one in ten, into the bubo, it has the effect of preventing the formation of pus in the bubo sac, and causes the secretion of what would otherwise be pus, to become a clear and serous looking fluid. The injection is done by a common glass urethra syringe, the nozzle being inserted into the opening into the bubo. This causes some amount of pain at first, but it soon passes off. Care must be taken, however, that none of the solution gets on to the scrotum or on the skin of the thigh or nates, as it acts as a powerful escharotic on some individuals. This injection should be squeezed out of the sac by moderate pressure, and it need not remain in it longer than a few seconds. I prefer injecting on the day following the incision, as this allows the pus to be freely discharged and the bubo sac to contract somewhat. I repeat the injection after an interval of three days, applying in the meantime over the bubo a piece of lint wet with carbolic acid, diluted to 1·40, and covered with gutta percha tissue. The interval of rest is of importance, inasmuch as it allows the reparative process of nature to be developed, as, after all, it is this that heals and not the applications.

Should another bubo form in the vicinity, and a communicating sinus establish itself between them, or should the extremity of a sac of a bubo be found to extend into the inguino-scrotal angle or in an opposite direction, none of which are of uncommon occurrence, instead of introducing the director, and slitting up the sinus or bubo to its full extent, I find a better plan is to introduce a probe to the furthest limit of the sinus or bubo sac, and make a small opening in the integuments so as to allow the extremity of the probe to pass through; by doing this a course is made for a free current of the carbolic acid injection to pass through, and in a few days the healing process is more satisfactorily established than if the sinus was laid open throughout its whole extent. Why this should follow it is difficult to explain, but one sinus treated in this way will be sufficient to show that it has this effect.—*Medical Press and Circular*, *July* 28, 1869, *p.* 71.

MIDWIFERY,

AND THE DISEASES OF WOMEN AND CHILDREN.

85.—CONCERNING THE ACTION OF OPIUM UPON THE UTERUS; AND PARTICULARLY AS A PARTURIENT AGENT.

By Dr. P. C. **Barker**, Morristown, New Jersey, U. S.

[Dr. Barker has found opium of use in those cases of labour where contractions of the circular fibres of the os prevent its physiological dilatation, proving the source of great distress to the patient and annoyance to the attendant. A few cases are given illustrative of this.]

Case 1.—Mrs. H., about 25, a strong and healthy woman, primipara, was taken in labour two p. m., July 15, 1862. Saw her soon after. Pains frequent, and of moderate severity; os dilated sufficiently to admit the point of the index-finger. Head presenting in first position. Left her for half an hour, and upon returning found her condition unchanged. Visited her at intervals until late in the evening, when, no progress having been made, ordered antimon. et potass.-tart., gr. ⅛, every half hour. Went home, leaving directions that I should be sent for if any change occurred. Messenger came for me about two a.m., 16th. No further dilatation. She complained very much of the severity of the pains. Tartar emetic, gr. ¼, every half hour. No improvement resulting, and nausea being constant, it was discontinued in the morning, and a stream of warm water was thrown upon the os, by means of a Davidson's syringe, for half an hour. This was repeated three times during the morning.

Two p.m. Still no dilatation. Patient a little feverish, and complaining of being very tired and sleepy. Ordered morph.-sulph., ¼th, and left her to get a little sleep, while I went to attend to other engagements. Returning about an hour after, I found mother and child comfortably asleep side by side. About half an hour after taking the morphine she had a hard expulsive pain, and before any one could leave the house the child was born. The pains had not changed in character until just before the termination of the labour, nor had she been asleep.

Case 2.—Mrs. O., 35, multipara. Previous confinements easy. Taken in labour with her fourth child, November, 1863. Pains of same character as in case 1, for sixteen hours, producing little dilatation. At one a.m. gave morph. sulph., gr. ⅛, hoping to quiet the pains. Left for home, a short distance away, and retired at once. Just as I was getting asleep, a messenger came for me in hot haste, stating that the child was born. Hastily dressing, I returned in time to remove the placenta. Less than three-fourths of an hour had elapsed since I quitted the house. She had but one pain, of different character from those which had tormented her so long unavailingly previous to taking the morphine.

Case 3.—Mrs. W., about 24, primipara, sent for me early in the evening. Being absent from home, my former partner, Dr. F. D. Leute, of Cold Spring, N. Y., answered the summons. Upon my return, I went to relieve the doctor. There was no dilatation, although the pains had been recurring for some time. We gave her morph. sulph., gr. ¼, and went home, giving directions to send for me should any change occur.

On the following day, I learned that about half an hour after departure she was seized with severe expulsive pains, which terminated the labour before a messenger could be di*spatched* after me.

It is obvious that morphine was given in these cases, as it is usually given by the profession, if at all, with the intention of obtaining a respite from the pains, in the hope that when they returned they would be more efficient. I was surprised in each case at the result, although in the first I attributed it to the repeated use of the warm douche, from its recognised power in certain cases of this character. In the succeeding cases I was obliged to look for a different explanation, and at length concluded that the morphine increased the expulsive power of the body of the uterus to a degree sufficient to overcome the circular fibres and connecting tissue of the os uteri. Further light was thrown upon the subject by the following case:

Case 4.—Mrs. G., 28, multipara. In labour a number of hours. Os uteri remaining about half dilated, and rigid. Gave morph. sulph., ¼ gr. About half an hour after, while making an examination during a pain, my first and second fingers being applied to opposite sides of the os, in order that I might observe the effect of the pain upon its hitherto unyielding tissues, I was surprised to feel it easily dilating.

In this case I suspected that while opium stimulated the fibres of the body of the uterus (longitudinal and oblique), it also relaxed the circular fibres of the os. Further observation, in a large number of cases of varied character, has convinced me that opium, instead of having a general anodyne effect upon the uterus, possesses this special power as a parturient agent. I say general anodyne effect, for while it sometimes quiets uterine contractions (witness its universal use for this purpose), yet it is in those cases in which the circular fibres are called into action alone, or where the longitudinal and oblique fibres contract irregularly—in short, in *false pains*. I am fully persuaded that *opium never did or can arrest a physiological labour.*

I have many times been called to cases in which the pains have returned regularly and with increasing intensity for a number of hours without producing dilatation to any extent, and after giving a full opiate have had the satisfaction of finding a marked improvement after a sufficient time had elapsed for its absorption, the patient having even harder contractions with less distress than before, and the os uteri being speedily dilated.

During the first stage of a physiological labour, I believe that the circular fibres of the os are passively relaxed; and that the active, usually gentle, contraction of the fibres of the body of the uterus serves to overcome the resistance which the tissues of the cervix and os present to dilatation.

Now if the circular fibres of the os retain their tonicity, or if they contract with those of the body during a pain (and I have felt them contracting in a number of cases), no dilatation can be effected; or, at any rate, it will be with great difficulty, and the resulting distress will be greater than when they offer only the minimum amount of resistance.

The cases above narrated and referred to have taught me that opium possesses the power of relaxing the circular fibres, at least of the os, and of stimulating the longitudinal and oblique fibres into active contraction. It is upon these principles that opium is exhibited in dysmenorrhœa, when it is dependent upon spasmodic contractions of the circular fibres; or where it is owing to the presence of "menstrual decidua," clots, &c.

In abortions it is an invaluable remedy, facilitating dilatation, diminishing hemorrhage, promoting the expulsion of the placenta, and lessening suffering.

Ergot, on the other hand, by causing contraction of the circular fibres, retains the placenta, and therefore should rarely be given (in abortion) until after the fœtus and secundines have been expelled.

Placenta prævia.—I have used opium in three cases of placenta prævia, one at the sixth month and two at the term, saving the mother in each instance. In another case I attempted to turn, but, having made an erroneous diagnosis as to position, the placenta being planted directly over the os uteri, I introduced the wrong hand, and, failing to get hold of the feet properly so as to bring them down, I detached the (entire) placenta rather than lose time by changing hands. I mistook a R. Occip. Post. for a L. O. Anter. position. The hemorrhage ceased at once, and the mother subsequently did well.

I think that opium meets two important indications in *placenta prævia*: 1.

It facilitates dilatation, thus shortening the period of greatest danger. 2. It promotes the expulsive power of the uterus. It also serves to lessen hemorrhage by a special hæmostatic action.

It is an interesting fact that, in one of these cases, when the respiration was reduced to four in the minute by cumulative action of the opium, which had been too frequently repeated by mistake, the uterus expelled the child with one pain, thus illustrating my statement that opium does not possess the power of arresting normal uterine contractions.

Hour-glass Contractions, &c.—While hour-glass, cylindrical, or other irregular tonic contractions of the uterus (particularly those which occur after the expulsion of the fœtus) may be (and doubtless are sometimes) spontaneous, still in my experience they have always seemed to be due to ergot. Since I have learnt the special power of opium, as set forth in this paper, I have used it in these cases with invariable success, although some of the most approved obstetric authorities say such use "is objectionable."

I will give the following cases in point:

Case 5.—December, 1864. Mrs. McD., aged about thirty-eight. Primipara. Labour progressed steadily until the head had fully distended the perineum. Retrocession followed every pain, and, as they were neither strong nor long, no progress was made. The vulva too was dilated, and I gave f ʒ iss. Squibb's fl. ext. ergot to complete the delivery. Fifteen minutes afterwards the peculiar contractions produced by ergot commenced, and the child was soon born. Placing my hand upon the fundus of the uterus (it having been pressed upon by the hand of an assistant while the child was being delivered and the funis tied and severed), I discovered it to be much elongated, reaching above the umbilicus; and, making a vaginal examination, found the placenta to be beyond the reach of my fingers, and, introducing the hand, discovered it so tightly grasped by an hour-glass contraction that I could not remove it. Gave morp.-sulph. gr. ⅓, noting the time. A little less than half an hour afterwards I was awaked (having fallen asleep from great fatigue) by a contraction of the uterus under my hand. The placenta was expelled with considerable impulse, and the uterus contracted down almost entirely below the os pubis (which by-the-way, judging by my experience, it seldom does, teachers and text-books to the contrary notwithstanding.)

Case 6.—Mrs. S , multipara. A delayed labour dependent upon inefficient pains. Gave f ʒ iss. ergot. The child being born, I delivered the placenta at once (as I now invariably do after giving ergot). A cylindrical contraction immediately followed, the fundus rising considerably above the umbilicus, in fact almost as high as the ensiform cartilage. The cylinder was about three inches in diameter, firmly and uniformly contracted. An opiate was given, and in due time a permanent lobular contraction followed.

Dr. J. D. Trask, in his essay upon "Rupture of the Uterus," published in the *American Journal of Medical Sciences*, January and April, 1848, gives four cases of rupture of the uterus due to ergot. Malgaigne and others have reported similar cases. The following case is given to show how this accident *might* be produced in a diseased or even very powerful uterus, as well as to illustrate the apparently antagonistic effects of ergot and opium upon the gravid uterus.

Case 7.—Mrs. M., multipara, about thirty-five. Previous confinements easy. Present labour not worthy of note until the os was nearly obliterated, a ring only being left, when dilatation was for some unknown reason arrested, and no progress made for an hour. The uterine contractions then becoming inefficient, gave ʒ iss. ergot. As soon as the pains peculiar to ergot began, I made an examination, and found the os less dilated than before, and its fibres contracting with those of the body. Gave gr. ⅓ morph.-sulph. Within half an hour the pains had become more like those of a "physiological labour," theos uteri relaxed and became dilated, and the expulsion of the child speedily followed.

I gave opium in this case, with the expectation that it would produce a relaxation of the circular fibres of the os. It seems to have exerted this power in opposition to ergot as effectually as in the "hour-glass" and other irregular contractions above mentioned.

It may readily be seen that the simultaneous action of the ergot upon the os and body *might* have caused a rupture of the uterus. The contractions produced by ergot are continuous. I have often observed, however, that they have not been general, but have occurred in different sets of fibres successively. Herein lies one great danger of its use. In these, as well as all other irregular contractions of the uterus, I find opium a *prompt and reliable remedy*. In fact, I now use it in those cases of delayed labour dependent on inefficient uterine contractions, instead of ergot.

This property being established, the administration of opium admits of wide application in uterine therapeutics. In dysmenorrhœa, abortion, irregular contractions of the uterus of all kinds, previous, during, and subsequent to labour, and in placenta prævia as an adjuvant to Barnes's dilator, it will be found to be a valuable remedy; more certain in desired action (when given under proper indications) than any other remedy in our profession. Such at least it has been in my hands in quite an extensive obstetric experience.—*New York Medical Journal, June*, 1869, *p*. 262.

86.—THE OXALATE OF CERIUM IN THE VOMITING OF PREGNANCY.

By Dr. J. Waring Curran.

The object of the present paper is to bring more prominently forward the valuable therapeutic action of the oxalate of cerium (first recommended by Sir James Simpson) in controlling the distressing nausea of pregnancy. Most practitioners have at one time or another experienced the difficulty of finding a successful remedy for the alleviation of this most disagreeable concomitant of the parturient state when it arises, and a few perhaps at the cost of their professional reputation. Baffled as others have been in getting hold of a successful agent to counteract the vomiting of pregnancy, experimenting with every new remedy likely to prove efficacious, adopting the favourite formula of reputed obstetricians, and exhausting every available and plausible method of treatment without reliable success, I became induced to prescribe the oxalate of cerium, and I can assuredly testify with the best effects and the most satisfactory results. Doubtless there are many remedies which temporarily subdue the incessant nature of the vomiting by neutralising the acid generated in these cases; but none with the *permanent* and salutary advantages of the drug I advocate.

I administer it in the form of pills, as follows:—

℞. Cerii oxal.; ext. lupuli āā gr. 24; div. in pil. xij., cap. j. ter in die.

and at the same time exhibit bromide of potass in ten grain doses with the tincture of yellow cinchona bark and spirits of ammonia. The mixture and pills appear to constitute a most successful plan of treatment.—*Medical Press and Circular, July* 14, 1869, *p*. 29.

87.—ON THE INDUCTION OF PREMATURE LABOUR.

By Dr. Robert Barnes.

Having discussed the various methods of provoking labour which have been practised, we are now in a position to select the most safe, convenient, and efficient. it has been already said that no method is so much in harmony with the principle of acting *cito*, *tuto*, *et jucunde*, as the introduction of the elastic bougie into the uterus. The plan I have successfully practised for some years is the following:—First, overnight pass an elastic bougie six or seven inches into the uterus, coil up the remainder of the instrument in the vagina; this will keep it *in situ*. Next morning some uterine action will have set in. In the afternoon, at an appointed time, proceed to *accelerative* measures.

Before rupturing the membranes, adapt a binder to the abdomen, and let this be tightened, so as to keep the head in close apposition to the cervix. This will often prevent the cord from being washed down by the rush of liquor amnii. Dilate the cervix by the medium or large bag, until the cervix will admit three or four fingers. Then rupture the membranes, and, before all the liquor amnii has escaped, introduce the dilator again, and expand until the uterus is open for the passage of the child. If the presentation is natural, if there is room, and if there are pains, leave the rest to nature, watching the progress of the labour. If these conditions are not present, and one or other is very likely to be wanting, proceed with accelerative methods—that is to the forceps or turning, or, in cases where the passage of a live child is hopeless, to craniotomy. By pursuing this method we may predicate with great accuracy the term of the labour. Twenty-four hours in all—counting from the insertion of the bougie—should see the completion of the labour. The personal attendance of the physician during two hours is generally enough. The mode of proceeding must vary according to the conditions of the case.—*Medical Times and Gazette, March* 6, 1869, *p.* 241.

88.—ON TEDIOUS AND DIFFICULT LABOUR.

By GEORGE H. KIDD, Esq., Obstetric Surgeon to the Coombe Lying-in Hospital; Hon. Sec. Obstetrical Society of Ireland.

There is no problem in practical midwifery of more importance, or, perhaps, of such importance, as to know when to interfere and afford assistance in cases of tedious labour. The often-repeated maxim, that "meddlesome midwifery is bad," and that "the powers of nature should be trusted," have now happily lost their hold over practitioners, and it has become the rule to afford early assistance rather than encounter the dangers of delay. But while it is agreed that the onset of the dangerous symptoms described by authors under the terms "powerless labour," "exhaustion," "cessation of labour pains," &c., &c., should not be waited for, it is incumbent on us not to expose either mother or child to the risk of operative interference without necessity, and the problem to be solved in each case is, at what period does the necessity arise?

An observation of Dr. J. Braxton Hicks will afford great assistance in determining this problem. Dr. Hicks finds that in the course of a tedious labour the pains may cease under two conditions, which must be discriminated for the determination of the proper mode of treatment.

The first of these conditions is a state of quiescence, in which the uterus is simply resting quietly. During it the pulse is not raised, and there are no untoward symptoms beyond languor, and possibly faintness. After a time the labour pains return, and delivery may be accomplished naturally, and with safety to both mother and child.

The second condition is one of continuous action, and by whatever cause the labour be obstructed, whether by contractions, &c., of the softer, or of the bony parts, or by the irregular spasmodic action of the uterus itself, sooner or later the rhythmical pains merge into this continuous action till it alone remains. This condition Dr. Hicks believes to be the precursor to the symptoms of "powerless labour," "exhaustion," &c., and as soon as it commences, those symptoms gradually follow which have been held as indicative of the necessity for artificial delivery, such as the rise of the pulse, dry tongue, hot skin, &c.; and in those cases where, after hard labour, these symptoms have occurred, the uterus will be found in a state of permanent action, with the rare exception of those where the uterus was ruptured, or violent mental emotion has subjugated its power. This continuous action persists to the very verge of dissolution. In one case of arm presentation, where labour had lasted a week, and three attempts to turn had been made, the patient, when Dr. Hicks saw her, being scarcely able to articulate, and having her tongue very brown, and pulse 150, no change from the excessive rigidity took place, even under the influence of chloroform, till a few moments before death. So hard was the uterus in all its parts that it bore no resemblance to living contracting tissues. In this state Dr. Hicks believes the uterus becomes gradually irritated, and continuous action is set up so that though the pains may seem to have ceased. and may only occur at irregular intervals, it is really more active than before, tightly compressing the child, and falling into the inequalities of its form, whereby the child is prevented from escaping, every indentation of the uterus forming, as it were, a ledge past which it is difficult to draw it, or to pass the hand if we desire to turn. Once this condition is established it is rare that the rhythmical pains ever occur with such force as to expel the child, and sooner or later interference becomes necessary.

To distinguish these two conditions of quiescence and continuous action it is seldom necessary to do more than examine the state of the uterus through the abdominal parietes; but occasionally it may be necessary to pass the hand within, past the presenting part. In the first case the uterine walls are lax and flabby, and the fœtus is readily detected within, floating about with ease. In the other the uterus is hard and firm, and tightly moulded to the fœtus, which cannot be swayed about. This want of mobility of the fœtus is a distinguishing sign of the contracted state of the uterus. It occasionally happens that the fœtus, especially when dead, is rolled up into a globular form, having lost the ovoid. Percussion affords another sign. If the uterus be contracted there will be resonance up to the margin of the hard body. If it be lax, the dulness will extend beyond the edge of the hard body.

Dr. Hicks attributes this contracted state to exhaustion of the nervous power rather than to direct pressure on the soft parts of the mother, and he makes the following observations as to the treatment to be adopted, both when the uterus is relaxed and when it is contracted:—

"A proper consideration of these two forms of deficiency of the rhythmical uterine action enables us to decide upon the proper mode of treatment with great distinctness, and it will materially help us also to do so at any early period, earlier, indeed, than generally has been held possible.

"If it is true, as already stated, that when the clamping continuous action of the uterus has once begun, there is very rarely any hope that the rhythmical expulsive pains will again preponderate to such an extent as to expel the fœtus at least unaided; and as we know that the action of the ergot of rye is to cause this very action, if it fail to cause expulsive pains, and to increase it when present, it is clear that the administration of this drug should be avoided in this state of affairs. I am not prepared to affirm that it may not, in some few cases, again rouse the expulsive pains sufficiently to expel the fœtus, but its use must under the circumstances be attended with a degree of risk such as it seems very undesirable to incur.

"But if there be this objection to the use of secale and other uterine stimuli, there is, on the other hand, a clear and distinct indication in favour of operative interference; the mode in which it is carried out of course depending on the nature of the case, but that which is accomplished by means of traction would suggest itself as being the best, inasmuch as it would enable the fœtus to pass through the uterine grasp, and to distend the contracted portions.

"An example of this class of cases is not infrequently found in a primipara, in whom notwithstanding uterine pains have continued for a long time, no progress has been made. On examination it will be found that although the head of the child have escaped the os uteri, the shoulders are caught either by the os uteri itself, or by a contraction a little way above it. When the detention has continued a certain time, the rhythmical pains gradually merge into the continuous form, and then it is very rarely that the fœtus is naturally expelled, particularly so if, secale having been given, it has failed to extrude it. Then unless timely assistance be given, the fœtal life is extinguished, symptoms of irritation, then of exhaustion come on, followed by putrid decomposition of the fœtus, and the patient sooner or later succumbs. Thus a comparatively small obstruction occurring, delivery by natural powers is made *nearly impossible* by the grasping uterine contraction. It matters not, however, in what part of the parturient passage the hindrance is situated, its position only affects the period and rapidity of the occurrence of the serious symptoms.

"There is no doubt but that in some cases where the case is taken early, the continuous action yields to the influence of chloroform, but inasmuch as this remedy also, in a certain degree, diminishes the expulsive pains, it is by no means certain that its use will be succeeded by progress; on the contrary, it may be said that, with the exception of contracted states of the os uteri, the cases are rare in which expulsion of the child would occur after its use in the circumstances just narrated.

"From a consideration of the above circumstances we may deduce the following as our rule both as to the time and the mode of our rendering assistance, namely:—

"If, on placing the hand on the uterus externally we find it firmly contracted around the fœtus between the pains (the observation of this point being made over a sufficient period); or if there being no pains we watch for some time and find no relaxation, we may be nearly certain that further waiting will effect no good; and, therefore, in other words, it is worse than useless to postpone assistance any longer, and this rule will be still more distinct if we find the pulse rising, the countenance anxious, and much distress felt in the uterus.

"If on the contrary we find the uterus lax, then we may safely wait as long as the pulse be quiet; to this, perhaps, an exception may be taken, where in certain cases the head may be firmly impacted in the cavity of the pelvis by the pains which preceded the state of relaxation. In such cases we might wait safely if we could push back the head a slight degree so as to remove the persistent pressure on the maternal soft parts, being of course ready to employ artificial aid if the recurring pains were not sufficient; otherwise, if much time elapse, it will be necessary to interfere to rouse the pains or draw the head through.

"Should the pulse rise, or vary much, or other general symptoms arise when the uterus is relaxed for some time, it is more than probable that some lesion has occurred, or some unusual condition has interfered, such as an attack of an exanthem, pneumonia, &c., for the cases are rare indeed in which 'powerless labour' in Dr. Churchill's sense is present without the condition of continuous contraction having preceded it, if we except that state which is induced by violent mental emotions or rupture.

"It has been given as a rule by some authors that abstraction of the child should not be done unless there are pains present to assist the withdrawal of the child, secure the expulsion of the placenta, and keep the uterus well contracted after. To a certain extent this is a safe rule, but it is one which is indefinite, because the 'pains' may be absent, and yet the uterus very active, over-active indeed, as has already been pointed out, and even if it be not, yet it is found that when the head is drawn down, the uterus does contract after.

"What are the explanations for these facts?

"Where there is the continuous action we may safely draw down the fœtus with proper rapidity without fear. The uterus contracts firmly on the receding contents, and even sometimes the rhythmical pains again are re-excited, and the placenta is expelled naturally the uterus remaining well contracted afterwards. Sometimes the uterus continues so firmly contracted after the withdrawal of the fœtus, that the placenta is held as firmly in its grasp as the fœtus was, so that it has to be removed by artificial aid.

"But where the uterine walls are relaxed, it doubtless is the best plan to endeavour to rouse the uterine action by oxytoxics, such as secale, &c., but it not infrequently happens that when the head is drawn down to the outlet reflex action is excited so much as sometimes to assist materially in the expulsion of the fœtus, and to secure the expulsion of the placenta and uterine contraction after. Yet the removal of the child under these circumstances is attended by some risk of hemorrhage, especially if the child be extracted too rapidly; and if the uterus does not respond quickly to the fresh irritation. It would be *best in these cases to give* a trial of secale first of all, and then if no action ensue, the head may be slowly delivered, and the remainder of the body be allowed to remain for a time in the passages to stir up the uterine activity, while, in the meantime, we employ the various other means known to be capable of rousing expulsive pains; and this would be the rule in those cases where there is clearly such an obstacle to the birth of the child as in any case would demand traction, but where the pains had subsided and the uterine walls were lax.

"Thus we may briefly say that, in both cases of absence of the pains, we may do well (with due care) to use extraction. That *extraction* is peculiarly required in the cases where *continuous action* has supervened, while secale is detrimental; but that *secale* and uterine stimuli are of great service where the uterus is *relaxed;* while extraction (if adopted) should be employed with slowness and caution.

"It is proper to state that it is not intended to be said above that a contracted state of the lower segment of the uterus, as revealed to the hand passed internally, necessarily implies a generally contracted condition, because the fundus might be coincidently relaxed, and if extraction were made suddenly, hemorrhage might occur above the constriction from the relaxed upper portion.

"The following is a *résumé* of the principal points desired to be established in the foregoing paper:—

"1. That it is very rare to find symptoms of 'Powerless Labour' (Churchill) where the uterus is relaxed.

"2. That where serious symptoms have begun, and at the same time the pains have apparently ceased, it will almost invariably be found that the uterus is in a state of continuous action.

"3. That the continuous action is the cause of the symptoms of 'powerless labour.'

"4. That the time at which these symptoms arise varies considerably according to peculiarity of the patient, the violence of the action, and position and presentation of the child.

"5. That if this constant contraction be fully established, it is better to deliver the child artificially, unless we first try the effect of chloroform.

"6. That the effect of the continuous action is exhausting to the mother, and liable to be fatal to the child.

"7. That the use of secale is contra-indicated in such cases.

"8. Where the uterus is lax we can generally wait a considerable time without danger to the patient or to the child. When the uterus has been allowed time to recover its nerve force, then it is advisable to give some oxytoxic, as secale, &c. If this fail, we may then draw down the head to the vulva slowly and cautiously, which will probably induce uterine action. The removal of the child must be done cautiously, and only as we find the uterus to respond."
—*Dublin Quarterly Journal, May,* 1869, *p.* 452.

89.—ON THE USE OF OBSTETRIC INSTRUMENTS.

By Dr. Joseph Griffiths Swayne, Physician-Accoucheur to the Bristol General Hospital, and Lecturer on Midwifery at the Bristol Medical School.

In treating of obstetric instruments and their use, I intend to restrict my observations to those which are employed in assisting labour, and to give as much as possible the results of my own experience as to the best manner of using them. I propose taking the stages of labour in the order in which they occur, and describing the instruments which are adapted to each. In the first stage of labour artificial assistance is scarcely ever necessary, because delay in this stage seldom rises from mechanical obstacles, and is very rarely dangerous as it is in a protracted second stage. Still, however, it is sometimes necessary to have recourse to artificial dilatation of the os uteri. The cases requiring such aid are of three kinds. In the first class of cases we have to *anticipate nature*, and commence dilating the os uteri artificially; as, for instance, in the induction of premature labour. In the second class, we have to assist the powers of nature when they are inert and sluggish, or when they meet with a greater mechanical obstacle than they can overcome, as in protracted first stage from inefficient uterine action, or from rigidity of the os uteri. In the third class, we are obliged to hasten the natural process of dilatation on account of complications, such as convulsions, which render a speedy termination of the labour necessary. The instruments for accomplishing these purposes are various. They effect their object as dilators by powers of expansion which are the result either of inherent elasticity, or of their capability of being distended by fluids injected into them. Accoucheurs have at different times invented a great variety of these dilators; but those which have now come into common use are of three kinds, and have all in turns been employed by me according to the exigencies of each particular case. When the os uteri is so contracted that it will not admit the tip of the index finger, dilators of the smallest and most rigid kind must be had recourse to. For this purpose none are so good as tents made of the dried stem of the sea-tangle (*Laminaria digitata*). These are much more expansible, and therefore much superior to those made of gentian-root, which, until lately, were more commonly used than any other vegetable substance for the purposes of dilatation. They are readily obtained at most surgical instrument makers' shops, where small boxes are usually sold containing ten or a dozen pieces of tangle, most of which are about one and a half inch in length, and about the thickness of a porcupine quill. When one of these pieces of tangle is inserted into the os uteri, and left there for some hours, it will imbibe moisture and swell to the size of a man's fore-finger. They are easily introduced into the os uteri, but not so easily retained, for their hard polished surface causes them to be readily extruded, and it is generally necessary to keep them *in situ* by means of a plug. The best mode of introducing them is to pass them up through a full-sized speculum, by means of a dressing, or polypus-forceps. A soft silk handkerchief, previously well oiled, should then be passed up to keep the tent *in situ*, and the speculum withdrawn. Some improvements have of late years been made in the laminaria tents; for instance, Dr. Greenhalgh, at one of the meetings of the Obstetrical Society, in 1865, exhibited a new form of Uterine Tent, made from the stem of the *Laminaria spiralis;* the peculiarity being, that it was a hollow tube instead of the solid stick heretofore used; and, at a subsequent meeting in the same year, Dr. Barnes showed an instrument made for him by Messrs. Weiss, for the purpose of facilitating the introduction of the perforated laminaria tent. It consisted of a wire stem, on which the tent was mounted, connected with a flexible tube like a catheter. The tent thus supported was introduced into the os uteri as easily as an uterine sound, and being there, by pushing up the flexible tube, the wire was withdrawn from the tent, leaving this *in situ.*

In cases, however, which require a greater amount of dilatation, something more efficient than the tangle tents must be used, and for this purpose nothing is better than pieces of compressed sponge. These may be made of various sizes and lengths, from an inch long, for instance, to as much as two inches and a half. They may be bought ready made; but for my own part, I always prefer making them myself, which I do in the following manner. Having selected a conical piece of sponge of firm texture, and not exceeding two and a half inches in length and two in thickness at the base, pass a strong loop of tape through the base of the tent. This is for the purpose of withdrawing it after it has dilated to its full extent. The sponge, previously well washed and cleansed, is then to be dipped in a solution of gum arabic of the consistence of thick syrup. A metal stilette, previously well greased, is then to be thrust down its centre from the base nearly to the apex. For this purpose an ordinary kitchen skewer will answer very well. The sponge is then to be compressed firmly by a piece of strong whipcord, which is to be rolled round it very tightly in regular spirals, lying close to each other, from the apex to the base of the cone, where it is fastened off, much in the same way as a boy would wind a piece of string round a peg-top. After this the tent is to be put in an oven or on the hob of a fire-grate, and left until it is quite dry. The cord is then unwound and the stilette withdrawn. After the inequalities on its surface have been removed by a rasp, the tent should be smeared with cerate or with spermaceti ointment, and is then ready for use. To apply it, it should be mounted on an uterine or an ordinary metal sound. If the os uteri be very high and the tent required be small, it will be more convenient to pass it up through a full-sized tube speculum. If, however, the os uteri be somewhat dilated, so as to admit one or two fingers, the tent required will be too large to introduce properly in this way. The best plan, then, is to place the woman on her left side, in the ordinary obstetric position. Having inserted the tips of the fore and middle fingers of the left hand into the os uteri, pass the tent up along the groove between the two fingers into the os uteri nearly as far as the base of the cone. A silk handkerchief, well oiled, is then to be introduced into the vagina as a plug to keep the tent in its place. When the plug can be inserted through a speculum the operation is rendered much easier, and is much less painful for the patient. After the tent has remained some time in the os uteri it absorbs the moisture secreted by the part, the gum arabic is slowly dissolved, and the sponge thus released from the power which held it together, swells by its own elasticity to four or five times its bulk in the dried state, and thus most effectually dilates the canal of the cervix. There is one great objection to sponge-tents, however, and that is the horribly offensive odour which they acquire after they have been retained many hours in the vagina; and there is, indeed, some danger from absorption of the putrid discharges which are thus kept in contact with the mucous surface. On that account I make it a rule never to leave one of these tents longer than twelve hours in the cervix uteri, but always remove it before that time, and substitute a fresh one if required. Certain improvements have recently been made in the sponge-tents, principally with a view to obviate this inconvenience. For instance, Dr. Aveling deodorises them by introducing into their central canal about two grains of finely powdered permanganate of potash, and this is found to answer the purpose very well. Mr. Ellis prefers carbolic acid, and uses the cacao butter or oil of theobroma, in preference to mucilage of gum arabic, for keeping the tent together. About a drachm and a half of pure crystalline carbolic acid is to be mixed with an ounce of the butter, whilst kept in a fluid state by being held over a small flame or placed in a hot water bath. In making the tent, the dried sponge is to be folded round a metal stilette, and compressed by winding tape round it. It is then to be immersed in the melted cacao butter "for a few seconds, so as to saturate only the outer layer of the sponge, and this it does, penetrating readily through the tape. The tent is then placed in a very cool place, and after it has solidified, the tape is cut and unrolled. All that is now necessary to complete it is to dip it once more into the same preparation—which for this latter purpose must be much cooler than before, and of about the consistency of cream. By this means a smooth and uniform covering is given to the tent, and it is ready for use." (Obstetrical Transactions, vol. ix.) Mr. Ellis lays great stress upon the advantages of making these tents of an ovoid form, so as to adapt them more readily to the shape of the cervical canal, and of a length not exceeding two inches.

By far the neatest and most ingenious method of dilating the os uteri is by the use of elastic bags into which water can be injected. We thus obtain a close imitation of the dilator which nature employs during the first stage of labour, viz., the bag of the waters. The best bags for this purpose are those which have been recommended by Dr. Robert Barnes. They are made of caoutchouc, and are of a fiddle shape, having, when distended, a narrower, cylindrical, central portion, dilating at each end into a bulging expansion. The object of this is to prevent the bag from slipping forward into the uterus or backwards into the vagina. The bag is prolonged into a long narrow tube, with a stop-cock at the end to keep in the water when injected; the injecting medium is the ordinary Higginson's syringe. Three bags of different sizes are sufficient. To facilitate the introduction of the flaccid bag into the cervix uteri, a small pouch is attached outside, to receive the end of the uterine sound, which, guided by the finger of the left hand applied to the os uteri, serves to *push the bag into the* cervical canal. I have myself frequently employed these bags, and have found that, when they can be applied, they dilate the os uteri more speedily and certainly than any kind of tent; and they have this advantage also, that the vagina need not be plugged to keep them in place. The chief objection to them is the difficulty which there is in introducing them when the os is not in the slightest degree dilated. This can be readily understood when we consider that the bag has to be folded round the sound before it can be introduced; and it is always better to use the largest sized metal sound which can be procured, in preference to the ordinary uterine sound, because the extremity of the latter being smaller, is much more likely to be forced through the Inidia-rubber pouch which receives it.

The next subject for our consideration is the class of cases which require artificial dilatation of the os uteri. And the first cases which naturally engage our attention are those in which it is advisable to induce premature labour. Now, it is by no means necessary that the os uteri should be artificially dilated to induce premature labour, for we can bring on uterine contractions by the old methods of puncturing the membranes, or separating them partially from the uterus, or by the administration of the ergot of rye, or by the more modern plans of injecting water, or passing up a foreign body, such as a catheter, between the membranes and the uterus, or by electricity or galvanism. Nevertheless, I believe that in theory it is much more scientific to imitate nature and commence the labour by dilating the os uteri, than to invert the process and induce expulsive action previously to dilatation; whilst, in practice, it is undoubtedly much safer for the child, and most probably for the mother also. I therefore always commence the process by the dilatation of the os uteri, and for this purpose I begin with a small sponge or (if the os be very contracted) tangle-tent. After this has been left in the canal about ten hours, I remove it, and introduce a sponge-tent of larger size; and so on, leaving each tent in for about the same time. It usually requires three of these tents to dilate the os uteri to the size of a crown, and at least thirty hours will generally elapse before uterine contractions take place. If it is desirable to complete the labour more speedily, we may do so with the elastic bags; but on the whole, I prefer in most cases the more slow but sure action of the sponge-tents. I usually find that when the os uteri is pretty well dilated, efficient pains will set in; but, should this not be the case, they may be excited by puncturing the membranes and giving ergot. I do not think it is safe to continue the dilating process more than three days, as the long-continued presence of the tents is not unlikely to produce great irritation and inflammatory softening of the uterine neck. I once saw a case in which rupture of the uterine neck, ending fatally, was in all probability due to this cause. It was necessary in this case to induce premature labour at the end of the eighth month. For that purpose sponge-tents and India-rubber bags were used, but the os uteri was high and the dilatation difficult, and the process occupied nearly a week. At the end of that time, violent pains came on, and the child, which unfortunately presented transversely, was expelled without assistance in a doubled state. The great strain was too much for the already weakened fibres of the uterine cervix.

The next class of cases admitting of artificial dilatation are those in which the first stage of natural labour is protracted, either from inefficient uterine action or from rigidity of the os uteri. In by far the greater number of these instances, as all here present can testify, time and patience are the sole requisites, and the issue may be left to the powers of nature, which will at last accomplish her object safely. Nevertheless, we occasionally meet with an os uteri so minute or so unduly rigid as to require artificial dilatation. For this purpose, no dilators are so good as the caoutchouc bags, provided the os uteri be large enough to admit the tip of the forefinger. If it is too minute for this, it will be necessary to commence the operation with a tangle-tent.

In the third class of cases, artificial aid is required for the purpose of hastening the natural process of dilatation, on account of some complication of labour, such as convulsions, which render speedy delivery necessary. In these cases the quickest method is the best, and no dilators are so good on that account as the elastic bags. The *first size* can generally be used, for the os is always dilated to some extent, accoucheurs being mostly of opinion that it is not good practice to deliver artificially, in such cases, unless some symptoms of labour have already set in. I witnessed a case of puerperal convulsions not long ago, in which these bags were of the greatest service in thus shortening the first stage of labour.—*British Medical Journal, Jan.* 23, 1869, *p.* 72.

90.—ON THE USE OF THE SHORT FORCEPS IN MIDWIFERY PRACTICE.

By Dr. Thomas More Madden, Assistant Physician to the Rotundo Dublin Lying-in Hospital.

[Having ascertained that the rectum has been properly cleared out, and the catheter having been used, a digital examination must be made to ascertain the exact position of the head.]

The operator now sits down beside his patient, facing the perineum, and introduces the index and first fingers of his right hand, previously smeared with lard, up into the vagina behind the symphysis pubis, and passes them round half the circumference of the pelvis on the child's head, until he comes in contact with the ear, which is generally towards the left iliac region, and sometimes on the right or towards either side of the pelvis. The ear should always be felt distinctly before the short forceps are introduced, and although some recent writers do not approve of this rule, yet I always act on it in my own cases.

The reasons for applying the forceps over the ear are, that the instrument, fitting better over the sides of the head and face, exercise a more equable pressure on the head, and are less liable to slip than when placed in any other position.

Before being introduced, the forceps must be brought as nearly as possible to the temperature of the body, and it is usual to immerse them in warm water for this purpose before they are applied. However, everything that adds to the fussiness of those about the patient should be avoided; and for this reason I now follow the practice recommended by Dr. Johnston, and never exhibit my instruments until I am applying them. The forceps will be sufficiently warm, if the practitioner keeps them, as I always do, in a pocket constructed for the purpose in his waistcoat, and my forceps are so small that there is no inconvenience in this.

The instrument is now to be smeared with lard, and the upper blade, the first to be introduced, is taken in the operator's left hand, and, being held as lightly as a writing pen, is, during an interval in the pains, to be slowly insinuated by a gentle, wavy motion, between the two fingers of the accoucheur's right hand, which, as I have already said, rest over the ear and the child's head, until it has passed so far up, that the lock lies close without the perineum. The anterior, or pubic blade, is always introduced first in this hospital, but in England the reverse is generally the case. The instrument must, in the first stage of the process, be passed upwards and backwards in the direction of the lower axis of the pelvis, but almost immediately it must be turned in the axis of the upper portion of the pelvis, upwards and forwards.

The point of the blade is to be kept in contact with the fœtal head, as the moment it diverges from it, the least degree of force might drive the instrument through the vesico-vaginal or recto-vaginal wall, the direction of the point being determined by the angle at which we keep the handle, so that except at the moment that the instrument passes over the ear, when the handle must be depressed a little during the introduction of the blade, the handle should be gradually raised as the forceps slides over the convex head of the child.

The handle is then to be given to an assistant to retain *in situ;* the operator, holding the instrument with the right hand, introducing two fingers of the left in the same manner as before, passes up the other blade of the instrument, until the locking parts of both are opposite each other, when, having passed the finger round the lock to guard the soft parts from being caught by it, the forceps may now be locked.

In locking the forceps, as in its application, force is unnecessary and unjustifiable. If the blades have been properly introduced and applied to the head, there will be no difficulty whatever in locking them. If they are not properly adjusted, no degree of force can be of the least use; and as it is essential that the forceps be properly locked before any attempt at extraction is made, if there should be any difficulty in locking, no time should be lost in trying to bring the instrument into apposition, but the blade last introduced must be at once withdrawn, and reintroduced in the right position.

The extraction of the head is generally the easiest part of the operation. The operator, bearing in mind that the axis of the pelvis is a curved line, the axis of the inlet being downwards and backwards, and that of the outlet being downwards and forwards, makes his traction to correspond with this. At first he pulls downwards and backwards, and, as the head descends, alters the direction of his force until the head comes to distend the perineum, when he draws the head directly forwards.

As a rule, delivery with the forceps should be as close an imitation of natural labour as possible,—that is to say, bearing in mind that in natural labour the advance of the head is so slow and gradual, that the progress effected by each pain is almost imperceptible, the forceps should be so gently used as to imitate in the slowness of its action the course which nature herself points out.

The powers of the instrument should be exerted in the most gradual manner, except in certain cases of complex labour where immediate delivery is essential, and no attempt at finishing a tedious labour by any sudden and forcible effort is justifiable; nor should any desire to relieve his patient from suffering, or himself from a wearisome task, induce the practitioner to attempt by force what time, patience, and skill, can alone safely accomplish.

The old rule of waiting for a pain before commencing to draw down with the forceps, and of acting in concert with the uterine expulsive efforts, is obviously well founded, and should be acted on whenever the pains have not ceased before the forceps have been applied.

As soon as the occiput escapes from the vulva, it is generally advisable, in order to prevent the risk of lacerating the perineum, to trust the case to nature, and if there be sufficient uterine action to accomplish the labour, the instrument should now be unlocked, and the posterior and then the anterior blade gently removed, and the head forced out by pressing well on the perineum during the pains.

After the head has descended into the pelvic cavity, the short forceps may be used in three different positions.

1st. Where the head is delayed at the outlet, the face lying in the hollow of the sacrum, the occiput under the arch of the pubis, and the sagittal suture lying in the perineum, the ordinary position at the end of the second stage of natural labour.

2nd. When the labour is delayed by the malposition of the head, the face being turned forwards towards the symphysis pubis, the occiput and vertex being opposed to the sacrum and perineum.

3rd. Where the face lies to either side.

In the first position, delivery according to the rules already laid down is generally easy enough. In the second variety of position, the lock will be at the vertex and the point at the chin, and, by depressing this, the occiput will be drawn forwards from the perineum. The management of the third position demands no special mention.

Forceps cases require to be very carefully watched during the period of convalescence after labour. As a rule, if the operation has been properly performed, the recovery of the patient will be as speedy and perfect as after a natural labour. But, even after the best obstetric operations, peritonitis, metritis, puerperal fever, inflammation of the pelvic structures may follow an instrumental delivery. This fact should be borne in mind, so that the moment the earliest premonitory symptoms of any of these diseases manifest themselves, they may be at once met with the appropriate treatment. After all cases of protracted labour, and especially after forceps cases, the state of the urinary function should be watched closely for the first few days, and if there be any retention, the catheter should be used at least twice a day.—*Medical Press and Circular, April* 22, 1869, *p.* 241.

91.—THE USE OF OBSTETRIC INSTRUMENTS.

By Dr. Thomas Savage, Professor of Comparative Anatomy in Queen's College, Birmingham.

It seems remarkable that until quite recently, so few practitioners should have advocated the more frequent use of the forceps in midwifery, except in difficult cases, such as the older writers describe. Mr. Steele, of Liverpool, Dr. Hardy, of Manchester, and Dr. Swayne, in the Journal of May 29th, have given the results of their experience, which is decidedly in favour of their use in cases where, as Mr. Steele says, "the second stage of labour ceases to be actively progressive, excepting, of course, when contraction or distortion of the pelvis necessitated turning or craniotomy, or where the os uteri is only partially dilated, and at the same time undilatable."

My own experience, though limited, is so decidedly in favour of this practice, that I am induced to record it. The following table will show my practice.

In 1864,	out of	73	labours, forceps	were used	3	times	or 1 in	24⅓
1865	"	154	"	"	15	"	or 1 in	10⅓
1866	"	173	"	"	18	"	or 1 in	9⅔
1867	"	203	"	"	37	"	or 1 in	5⅗
1868	"	204	"	"	31	"	or 1 in	6⅗
Total		807			104			

And of these 807 cases, five children were still-born; and one maternal death occurred from puerperal fever, which was, as far as could be seen, in nowise traceable to the means used to accomplish delivery. In comparison with this, I may give the statistics of the Royal Maternity Charity, as quoted by Dr. Ramsbotham, where, out of 48,996 deliveries, forceps, long and short, were used 73 times, or once in 671·2 cases; and out of these 73 applications, 17, or 1 in 4·05, children were still-born, thereby showing that their use was not resorted to until the head had been for a long time subjected to excessive pressure. In none of my cases have I found any ill effects afterwards, such as laceration of the soft parts, or extensive rupture of the perineum, &c.; and I cannot but think that more children would have been still-born if instrumental aid had not been forthcoming. The occipito-posterior presentation appears to offer most difficulty in effecting delivery; and Tyler Smith says that in these cases the head should be slowly rotated during the process of extraction, so as to bring the vertex towards the pubic arch, and thus convert them into occipito-anterior presentations; a proceeding which, to myself, has seemed very easy in a diagram, but to be attended with some difficulty in practice.

Nearly all my cases have been those requiring short forceps; and in most, labour would have been terminated by the natural powers, if I had not thought that much pain, anxiety, and exhaustion would be spared, especially in primiparæ. In the use of the long forceps, few practitioners will differ as to the cases, or the time, when they should be applied; viz., when there is moderate contraction at the pelvic brim, preventing the head from entering the cavity, and generally in the antero-posterior diameter, or where, from some accidental circumstance, such as convulsions, hemorrhage, &c., delivery ought to be effected immediately, while the head is still above the brim, or has only just entered the pelvis. These do not seem to be of very frequent occurrence. I can only recall about five cases out of the numbers given above. In a recent case I had the occipito-posterior presentation in addition to extraction from above the brim, which made the case a little more difficult, as it did not seem possible to diagnose the exact presentation before the forceps were applied.—*British Medical Journal, Aug.* 14, 1869, *p.* 183.

92.—THE USE OF FORCEPS IN VARIOUS COUNTRIES AND BY DIFFERENT MEDICAL MEN.

In Great Britain forceps are reported to have been resorted to in 1 out of 249 cases; in France, 1 out of 140; in Germany, 1 out of 106.

Simpson has used them in 1 out of 472; Collins 1 out of 720; Baudelocque, 1 out of 561; Ramsbotham, 1 out of 611; Madame La Chapelle, 1 out of 293; Madame Boivin, 1 out of 214.—*New York Medical Record, July* 15, 1869, *p.* 228.

93.—ON PUERPERAL FEVER.

By Dr. Beatty, Dublin.

[The following is taken from some remarks by Dr. Beatty upon a paper by Dr. Kennedy of Dublin, on lying-in hospitals.]

There are two modes by which metria or erysipelas obtains an entrance to the chambers of lying-in women, whether in private houses or hospitals, viz., epidemic influence and contagion. If the disease is epidemic it will make its way into the large hospital or isolated hut as surely as it does into surgical hospitals or private houses; and the woman who has recently undergone the operation of parturition is, to say the very least, as liable to its assault as any patient, male or female, who has been the subject of a wound, either accidental or intentional, by the surgeon. We know that during the prevalence of such an epidemic, no surgeon will perform any operation that he can possibly avoid. But the pregnant woman cannot postpone her operation. If we had the power of suspending nature's operation as the surgeon has to withhold his knife until "the pestilence that walketh in darkness" has passed over the land and vanished, the death-rate from metria would soon dwindle to a very low figure. But although we are powerless to shut out this first mode of infection, we are not so in the second. Contagion can be met, and the door can be shut in its face. To see how that can be done let us inquire who attend the patients in a lying-in hospital? A class of pupils chiefly composed of medical students. Again, let us inquire how these gentlemen are employed during the day when out of the lying-in hospital? They have their medical and surgical hospital to attend in the morning, when they are of course exposed to any malaria prevalent in the wards; and if they are dressers in the hospital and have to come in contact with wounds and ulcers, and compound fractures, many of them perhaps surrounded with erysipelatous inflammation, they necessarily carry away a certain amount of infection. If they pass from the wards to the dead house, and there take part in *post-mortem* investigation, passing a considerable time with their hands buried in a diseased and putrifying abdomen; if from that they proceed to the dissecting-room and there pass hours in the contaminated atmosphere of such an apartment, and in direct contact with flesh in every stage of decomposition; if such be the ordinary daily course of a medical student, I ask is such a person fit to walk into the wards of a lying-in hospital and attend a woman in labour in the evening? All who hear me know that this is not an overdrawn case. But when this source of danger is multiplied by six, eight, or ten pupils who have pursued the same course during the day, and frequent the same lying-in hospital during the evening and night, and then with laudable zeal to learn midwifery, examine every woman that may be in labour; if this takes place during a run of erysipelas in the surgical hospitals and while epidemic influence is abroad, and thus both doors are opened for the entrance of disease, how can we be surprised that fatal erysipelas so often makes its appearance. The wonder is not that some women die but that the number is not vastly greater. Now this is a danger against which no isolation of the patient in huts can protect her. My unfortunate patient, with whose case I opened these remarks, was in a most perfect state of isolation, nevertheless she fell a victim to erysipelas conveyed to her by her attendant; and every patient in any series of isolated huts that could be constructed would be equally exposed to contamination when their attendants were composed of a class of pupils such as I have described.

That metria is more prevalent now than it was forty years ago is a fact too well known; and why is it so? I think there are two causes in operation sufficient to produce this result. The first is the change in the type of disease which has taken place in this country in late times. All diseases have assumed a typhoid or asthenic form now-a-days, which was rare and the exception in the early part of this century. The kind of disease which then prevailed is, I may say, extinct. The true inflammatory fever—the synocha of Cullen—is now unknown; the pupils of the present day know as little about it as they do of phlebotomy and the use of the lancet. Inflammations which then appeared with full bounding pulse, flushed face, and burning skin, no longer present themselves, actually courting depletion; the same diseases are now all of the low typhoid type, in which depletion is inadmissible and stimulants are demanded. Hence it is that inflammations in lying-in women generally assume the erysipelatous instead of the phlegmonous form, and the results are more generally fatal.

The second cause is the difference in the class of midwifery students. It is only of late years that practical midwifery has been made a compulsory part of the curriculum for medical and surgical degrees; formerly, when I was a student, it was not so; and when I was a Fellow of the College of Surgeons and an M. D., I had never seen a lying-in woman. The practice then was not to attend the lying-in hospital until after all other school and hospital attendance was over, and many of the class were already graduates. You will readily perceive how a class thus constituted was less likely to carry erysipelas into hospital than are the classes of the present day. Great stress has been laid by Dr. Kennedy on the immunity from disease enjoyed by the maternity hospitals in New Ross, Waterford, and Limerick; but before we allow the superiority claimed for these institutions because they are small, we should ascertain who were the attendants upon the patients delivered therein. Now, we all know that there is no such class of pupils in these localities as I have just described; the women were most probably attended by resident midwives, with the assistance of a resident physician under the direction of the visiting medical officer; and with this absence of the means of daily importation of disease from without, the parallelism of these hospitals with the larger, where a large class of pupils are the attendants, is destroyed, and the argument founded on their salubrity ceases to be of much value. Another and probably not unimportant cause may be assigned—I allude to the more frequent *post-mortem* examinations that have been made of late years. Pathology, as is well known, has been cultivated with considerable ardour during the last half century, and this laudable desire to accumulate facts and extend the boundaries of knowledge was partaken of to a considerable extent by the masters of the Rotunda, and by none with more vigour and industry than Dr. Kennedy. There was no Pathological Society in former times to which specimens could be brought by those interested in science, or ambitious of obtaining a reputation for observation and industry; there was no temptation to pry into every cavity in every patient that died in any hospital, so forcibly described by Dr. Arthur Jacob in one of his allusions to the Pathological Society of this city, which he never loved. Speaking of the manner in which subjects for dissection were mutilated before they were suffered to leave the hospitals, he described the investigators as "actually trawling for specimens.' The Pathological Society of Dublin had been just recently established when Dr. Kennedy was Master of the Rotunda Hospital; and I have a lively recollection of the number and value of the specimens which he produced at our meetings. If Dr. Kennedy looks back to those days, as I have done, it is not improbable that he may attribute some of the serious mortality that occurred in the hospital during his mastership to the zeal with which he and his assistants cultivated pathological knowledge in the dead-house.

I have said that contagion can be met at the threshold of the hospital and forbidden to enter. I said so in a lecture delivered thirty years ago in the *Medical School in* Park-street. I then expressed my firm conviction that midwifery ought not to be studied practically until after the pupil had obtained his diploma, and that during the six months of his attendance he should attend no other hospital. I argued that to follow this course would be also most beneficial to the student; that with his mind unincumbered by other pursuits he could then give his whole time and attention to the acquirement of a real and sound knowledge of this branch of medicine, and not leave the institution with the superficial and crude ideas of its importance with which, under the present system of hurry, they are obliged to be content. That opinion has been strengthened by time; and, like Dr. Kennedy's thirty years of incubation, I now produce my egg fully hatched.

Midwifery must be learned, and can only be learned by practical experience; but it is not to be learned at the expense of the lives of the patients. I would allow no pupil to attend to any maternity institution while he was in attendance on any other hospital or dissecting-room. Theoretical lectures on medicine and surgery, and all other branches not bringing him in contact with dead bodies or disease he might attend, but a strict rule enforcing absence from the sources of infection should be at once instituted and rigidly enforced. This may cause a little delay and inconvenience to the pupil, but is that to be put in comparison with the preservation of the lives of the patients? Again, I would have no person in the institution, whether pupil, assistant, or master, take part in *post-mortem* examinations; but a separate officer, who would never enter the wards, should be attached to each institution, upon whom the duty of necroscopist should devolve. I firmly believe that the adoption of these suggestions would cut off the second mode of contamination to which I have asked your attention—viz., contagion, and that the assaults of metria would be confined to the first or epidemic influence, or the unhappy reception of a patient in whom disease has already commenced. Against epidemic influence no human barrier can be set up, either in palace, hospital, house, or hut, except ventilation and scrupulous cleanliness, both of which are rigidly enforced in the institutions of this city. I would finally recommend a good generous dietary to be established in all maternities, as a sure means of enabling patients to resist the demon metria.—*Dublin Quarterly Journal, August*, 1869, *p*. 305.

94.—ON THE PRODUCTION OF PUERPERAL FEVER BY INOCULATION BY THE ACCOUCHEUR.

By Dr. M'Clintock, President of the Pathological Society of Dublin.

Though but a limited contagionist, still I hold very strongly the producibility of puerperal fever by inoculation; as, for instance, where the hands of the accoucheur or nurse retaining some necroscopic matter or septic poison of any kind, come in contact with the highly absorbing surfaces of the maternal canals. The experience of Dr. Semelweiss at the Vienna Lying-in Hospital is, no doubt, familiar to you all, and needs no further mention in this place.

I cannot help thinking that if students, while attending at lying-in hospitals, were precluded from dissecting, or from being dressers at surgical hospitals, it would help to lessen the frequency of puerperal fever. I also think it would be well if the medical officers of lying-in hospitals were to abstain altogether from taking any share in post-mortem examinations. I very much blame myself for not having rigidly acted on this when I had medical charge of the Rotunda; but, unfortunately, the anxiety to secure a specimen for the class or the museum had undue weight with me. I also venture to surmise, with Dr. Kennedy's permission, that his zeal, too, in the pursuit of pathological knowledge—a zeal which is amply attested by the splendid museum he formed—may have helped to swell his hospital mortality. Now that I am in the enjoyment of the honour of being President of the Pathological Society, there is no need to hide my opinion, that the man who devotes himself to obstetrics should abjure the study of pathological anatomy.—*Dublin Quar. Journal, August*, 1869, *p*. 261.

95.—TURPENTINE IN UTERINE HEMORRHAGE.

By EDWARD GARRAWAY, Esq., Faversham.

Mr. Bradley, of Martley, near Worcester, a few years since published some very valuable records of the utility of turpentine in hemorrhages of all kinds. As a restorative in certain states of prostration, specially such as occasionally arise during the puerperal state, it is no less serviceable. Sometimes after a severe labour, accompanied or not with hemorrhage, great debility will ensue about the third day, characterised by a rapid pulse, tympanitic abdomen, and other symptoms not connected with peritoneal or other fever, yet threatening the advent of a typhoid condition. Here turpentine, both as an injection and by the mouth, is invaluable.

A recent case, in which the patient was apparently snatched from the jaws of death by the timely administration of this remedy, may be worthy of record.

Mrs. —, aged 28, in her first labour, was confined of twins on May 3rd. She was quite exhausted after the birth of the first child, and the uterus was only roused to expel the second by giving ergot, after which no further contractions occurred. No compression nor kneading of the organ would induce it to throw off the placentæ. An hour elapsed; and not liking to give more ergot, I passed my hand into the uterus, and found both placentæ entirely adherent. They were removed easily, and no blood was lost, though, subsequently, there was some slight hemorrhage. Mrs. —, remained weak, and was ordered a more liberal dietary than was usual.

On the third morning, I was sent for to see her dying. My first impulse on entering the room, was to call her husband up-stairs to take leave of her; my second, to attempt her restoration. She was bathed in a cold sweat, perfectly insensible, and breathing by hurried gasps; her pulse 140, was just perceptible; one hand was becoming blue and shrivelled. The tale they told me was this. Mrs. — had been permitted, contrary to my orders, to put the children to the breast. An hour and a half afterwards, the nurse perceived—as she termed it—"a great change," and sent for me. Having a stomach-pump and turpentine with me, I immediately passed the œsophagus-tube as far as possible up the rectum, and injected an ounce or more of turpentine diffused in mucilage, and, at the same time, covered the abdomen with hot flannel sprinkled with turpentine. In four or five minutes the respiration became freer, an occasional sigh was heaved, which appeared to do immense good by more fully inflating the lungs. Soon, the eyes opened and wandered round the room. Deglutition now became possible, and a teaspoonful of brandy with ammonia was got down, followed quickly by an egg, beaten up with brandy, sugar, and milk; and now the patient fairly rallied. I left her in an hour or two. At my next visit, she had not the slightest recollection of my having seen her or done anything for her that day. I believe the injected turpentine lighted up the dying embers, and enabled the stomach to receive the subsequent fuel which was laid on, of course with no unsparing hand.—*British Medical Journal, July* 10, 1869, *p.* 31.

96.—SUBCUTANEOUS INJECTION OF MORPHIA AND ACONITE IN CONVULSIONS AFTER LABOUR.

By Dr. R. M. BOWSTEAD, High Wycombe.

[The following cases are extremely interesting. They would have been more so could we say how much of the good effect is to be attributed respectively to the aconite and to the morphia.]

A. C., aged 19, was delivered of a full-grown child at 10 o'clock on the morning of the 10th of April. Her labour was rather tedious, but natural, and I left her very comfortable. At 7 p.m. I was sent for, and found her in a fit of convulsions, held down by four assistants. I applied cold to the head, and gave her full doses of antimony. At 10 p.m. the convulsions still continued. I administered a turpentine enema. At 1 a.m. convulsions as bad as ever. I applied a mustard poultice to the neck, and hot-water bottles to the feet. At 3 a.m. the convulsions had ceased; but the patient was delirious, and wanted to destroy her child. In about an hour the convulsions returned, and at 7 a.m. I found her as bad as ever. I gave her a small dose of morphia to procure a little sleep if possible, but to no purpose. All the day her convulsions continued. I had the head shaved, and ice applied. She could take no support. At 7 p.m. I found her sinking; her efforts to get away from those who held her had exhausted her. I therefore injected in the arm two minims of aconite (Fleming's) and one-third of a grain of acetate of morphia. In less than five minutes all the convulsions had ceased, and she was quietly sleeping. She slept for eight hours, during which time she perspired most freely, and on awaking asked for food. The rest of the treatment consisted of good support, and in three days she was convalescent.

About a month ago she was delivered of another child, and has done well.

J. H——, aged twenty, was delivered at 5 a. m. of a well-developed child. The labour was natural. At 10 a. m. I was sent for to see her. I found her held down to the bed, she struggling fearfully, and attempting to tear her bandage off. She was much exhausted by her struggles, and foamed a great deal at the mouth. I could not get her to swallow anything, and at once injected into the arm the aconite and morphia. In a minute all the convulsions had ceased, and her arms fell down to her side. She slept quietly for seven hours. When she awoke I ordered her beef-tea, with a little brandy if faint. She had no return of convulsions, and when I saw her on the second day she was convalescent.—*Lancet*, *May* 29, 1869, *p*. 747.

97.—ON ENDOSCOPIC EXAMINATION OF THE CAVITY OF THE WOMB.

By Dr. D. Commander Pantaleoni, Paris.

[We can hardly yet say what revolutions the more extended use of the endoscope may make in our views concerning the pathology and treatment of diseases of such an organ as the womb, but judging from the analogy of the discovery of the stethoscope, ophthalmoscope, and laryngoscope, we may certainly anticipate some innovations.]

The discovery of the ophthalmoscope and laryngoscope led to the invention of another instrument, the *Endoscope*, directed to the examination *by vision* of the internal organs, where no common light can be thrown, as it can be done in the examination of the larynx or of the eye. A further difficulty accompanied therefore the invention of this instrument; the necessity which existed of throwing a considerable quantity of light in an internal dark cavity, and that generally to be done through a narrow tube, as those organs do not generally communicate externally, but by narrow canals. Dr. Desormeaux, of Paris, was, undoubtedly, the first who invented a good instrument for this object, to which he gave the name of *Endoscope*, and Dr. Cruise, of Dublin, improved it very much by the introduction of a better light, and in a way of preventing the instrument from becoming heated by the burning of the light. It is always the instrument of Dr. Cruise that I have employed in my practice, and I am so well satisfied with it, that I owe a public testimony of thankfulness to its inventor, for the kindness with which he treated me in Dublin, and his willingness to show to me the employment of this instrument on several cases.

It was with Dr. Cruise's endoscope that I first examined a lady, who declared to me that she had been affected for nearly thirty years with a chronic coryza, or catarrh of the nose, and chiefly on the left nostril, and which no physician had succeeded in curing. It was not difficult to imagine first, and discover afterwards with the aid of the endoscope, the beginning of a polypoid vegetation on the mucous membrane of the nostrils, and through repeated cauterisations, and the injections of astringent liquid, to cure entirely an affection most troublesome, and which had made the patient very miserable.

It was three years afterwards, that the same lady aged about 60, consulted me to know if it was regular at her age to still lose blood by the vagina, as she was doing so daily, although in a small quantity. I declared immediately that she had most probably some fungous vegetations on the mouth and cervix of the womb, and I proceeded to an examination with the speculum, having already prepared every thing to perform the cauterisation, if the case required it. Unfortunately, I found *nothing* on the neck of the womb or vagina, which could explain the hemorrhage, and very seldom have I met a cervix presenting itself so healthy to the speculum, although offering to the finger a little retroversion. I was, however, so convinced of the exactitude of my diagnosis, that I declared to the patient that the illness was only existing higher than I thought, and it must have its seat inside the cavity, and very likely towards the posterior part of the womb, and giving, therefore, origin to the slight retroversion of the organ. I determined, therefore, to proceed to an internal examination of the cavity of the womb, and to make use in this circumstance of the endoscope, as I had several times proposed to my most honored and respected friend Dr. Sims to do; a thing, which I am not aware, as yet, has been ever attempted or done by anybody else; and this is the reason that has determined me to bring to the notice of the profession the description and result of this case.

Everybody knows how Dr. Sims proceeds to the introduction of the sponge tent through the canal of the cervix of the womb, being only a modification of the practice of the first inventor of the system, Sir James Simpson. I followed the system of Dr. Sims, and only as I had no assistant (as it is very difficult to have one in the common practice) I have always experienced a little more difficulty than he does in the introduction of the sponge tent, being obliged either to do it without any speculum, or to use only one hand, and therefore give up the help of the tenaculum to keep firm the womb, at the same time that the sponge tent is introduced and forced in. However, with some patience this difficulty is soon mastered. I leave the sponge-tent always in for twenty-four hours, recommending to the lady to keep quiet at home, and possibly to lie down. I found once, that my patient took a long walk, and no inconvenience whatever followed, but I think with Dr. Sims, that it may perhaps prove dangerous to forget such a precaution, and that we ought therefore to insist upon it.

The next day I proceeded to the removal of the sponge-tent. I had the lady lying on her left side, as it is usual in England in specular examinations or confinements, and I took the only precaution, that the lady should be as near and as much out as possible on the borders of the bed, as otherwise the lamp of Dr. Cruise's instrument might set fire to the curtains and at all events the endoscope be not so easily managed. Dr. Sims in his excellent work disapproves of the practice of removing the sponge-tent in the lateral situation of the lady, and after the examination he directs the woman to lie on her back, and then proceeds to the removal of the sponge and introduction of the finger for the digital exploration of the cavity. And certainly this system is the only practical one for the *digital* exploration, but I could not follow it, without again turning the woman a third time on her side, as the application of the endoscope is almost impossible if the lady lies on her back. The reason quoted by Dr. Sims against the removal of the sponge in the lateral position of the woman is, that the column of air precipitates itself inside the womb at once, and may, by its pressure, produce an irritation or an inflammation of the organ. I could never believe much in such an explanation; but knowing what a diligent observer he is, I always apprehend some mishap from following a plan, which he had occasionally seen dangerous. However, till now, I have not had, fortunately, any reason to confirm myself in those apprehensions.

The removal of the sponge, although made with the greatest precaution, produces always some bloody discharge, and as soon as the sponge tent was removed, I introduced with the greatest ease, inside the cavity of the womb a cylindrical tube No. 30 of the *filière* of Charrière, and of the length of twenty centimeters; and constructed in such a way as to be perfectly adapted to the usual endoscope. In fact, it differed only from the usual tubes of Desormeaux by its being shorter, and by having suppressed the lateral openings existing in the urethral tubes of Desormeaux. Having in such a way applied the endoscope, I could see most clearly in the inside of the cavity of the womb, and inspect the condition of the internal membrane. A polypous vegetation was easily discovered at the bottom of the cavity and towards the posterior part of the *fundus uteri* in my case. It was of a vivid red colour, unequal like a sponge, and of the largeness of a small strawberry. It was striking the difference with the pale yellowish colour of the rest of the membrane. I withdrew the endoscope, fixing the tube, however, upon the vegetation, and I introduced the caustic through the tube itself, being therefore quite sure of the impossibility of touching anything but the vegetation itself, and then each time I looked in again with the endoscope to certify the effect of the cauterisation before removing the tube. I was obliged to return six or seven times to the use of the caustic. I employed the nitrate of silver, the chromic acid, which I have experienced particularly useful, and I would have willingly tried the caustic of Filhos and Bonnafond, which I have so frequently and so advantageously employed on the neck of the womb, but I could not find any means of reaching with those caustics at twenty centimeters distance. The cauterisation performed, I always plugged the vagina with some cotton wool, to prevent the running of the caustic on the outside, as the nitrate of silver employed to the neck of the womb produces always a great pain to the outside parts without this precaution, and I have imbibed generally the cotton wool with a solution of chloride of sodium to decompose the nitrate of silver when I used this caustic.

I never saw the slightest inflammation of the body of the womb, or of the peritoneum through the employment of strong caustics or of the injections of a strong solution of iodine. In one case even my solid nitrate of silver broke, and a large piece was left inside the womb; but I had learnt already from the excellent work of Dr. Courty, how innocuous was' this accident; and the patient felt no inconvenience of any kind from it. The reason of this innocuity evidently lies in the mouth and canal of the cervix being widely opened, and therefore the injected liquids or the secretions produced by the cauterisation running out freely; and my experience is in this point in accord with that of the best gynecologists, that the accidents produced by the injections even of simple water were due to the circumstance, that the fluid being not free to run out from the womb, was either forced through the fallopian tubes in the peritoneum, or even kept inside the womb, acting as a kind of foreign body upon it.

The case to which I make allusion, and whose treatment gave origin to this article, proved to be one of the most perfect success, and with no return of the illness; but this case is not the only one where I employed this system of exploration. I have applied it several other times with a negative, but not an unpropitious result. In one case of the most obstinate and frightful repeated hemorrhage, where I had destroyed several fungosities round the mouth of the womb, it served to prove that the lady was perfectly cured, and I could send her safely to some iron springs, where in a month or two she recovered the most brilliant health. In another case it authorised me to employ freely some perchloride of iron locally, and internally the ergot of rye. The hemorrhage, which existed for several months, ceased immediately, and it did not return but with the regular menstruation and in the regular quantity.

These facts authorise me to think that this system of exploration may occasionally prove very useful to the practitioner. What objection could be raised against this system? It is scarcely necessary for me to answer an objection made by a colleague, who boasted that he could always with his finger reach to the same conclusion without any visual examination. It is exactly the same objection that practitioners of the old school raised against the use of the speculum. All the discoveries made by the use of this instrument, and the complete change introduced in the science of gynecology through it, is the best answer to be given to such an objection. Besides, there is no practitioner who does not know how often it is extremely difficult, if not impossible, to perform a digital exploration of the cavity of the womb; at all events, the dilatation of the canal of the cervix for the digital exploration ought to be at least double of the one required for the introduction of my tube. But there is another by far more important consideration. Even supposing that the digital exploration should be equally conclusive, in what way can it help to the treatment? Instead of that in my system, the tube of the exploration offers at the same time the only possible means to bring remedies on the cavity of the womb without touching either the vagina, or the canal of the cervix, or the mouth of the womb, and therefore it introduces also a new system of cure as well as of exploration.—*Medical Press and Circular, July* 14, 1869, *p.* 26.

98.—ON THE VALUE OF NITRATE OF LEAD IN THE TREATMENT OF SORE NIPPLES.

By Dr. J. G. Wilson, Professor of Midwifery in the Andersonian University, Physician-Accoucheur to the Glasgow Maternity Hospital, &c.

[Every one who is much engaged in midwifery practice must frequently feel the vexation of being unable to cure sore and cracked nipples. However trivial an ailment it may seem, few are of more real importance, in consequence of both the suffering caused by it, and of its being a frequent cause of mastitis.]

It is not my intention in the present communication to enter upon, far less discuss, the various circumstances which have been assigned as likely to cause or to favour the occurrence of sore or tender nipples. My object is briefly to call the attention of the profession to a simple and yet very effectual mode of treating cases of this kind, as I feel assured it is not so generally known as it deserves to be. I allude to the treatment of such cases by the local application of the nitrate of lead. From ample experience in the use of this substance —which has now extended over three years—I feel satisfied of its superiority to any other agent which I have hitherto employed. I have found it in numerous instances to succeed, when tannin, gallic acid, zinc, benzoin, borax, &c., failed to produce the desired effect. I do not mean, however, to assert that it will always succeed, or that it is an infallible cure, but in my experience the cases were few and rare in which I was disappointed with the result of its employment. The mode in which I use the nitrate of lead is in solution, dissolved in glycerine or brandy. The following is the formula I generally employ:—

℞. Nitratis plumbi, gr. x.; glycerini, ℥ i. Solve.

This is applied freely to the affected nipple after suckling. Care must be taken to wash the nipple previous to the next application of the infant. This astringent lotion generally produces a sharp smarting pain for a short time, but this soon subsides. In superficial abrasions or excoriations especially, I have found this application to have an excellent effect. In some cases of deeply fissured or ulcerated nipples, a stronger solution is occasionally required. In such instances, the lotion should be thoroughly applied, by means of a small hair pencil, to the whole of the fissured or ulcerated surface. The employment of the nitrate of lead may, if necessary, be combined with other modes of treatment. In severe cases, for example, the application of a teated shield, so as to protect the nipple while the treatment is being carried on, is sometimes advantageous. On several occasions, when treating cases of more than usual obstinacy, I have occasionally applied the nitrate of silver, collodion, or a solution of gutta percha, and found them useful adjuvants.—*Glasgow Medical Journal, May*, 1869, *p.* 321.

99.—ON FIBROUS TUMOURS OF THE UTERUS.

By Dr. **James Palfrey**, Assistant Obstetric Physician to the London Hospital; formerly Obstetric Physician to the Farringdon Lying-in Charity.

Fibrous tumours of the uterus have, by different authors, been also named "fibroids," "fibro-muscular tumours," hard fleshy tubercle of the uterus; muscular tumours (Dr. Wilks); and it will be well at the outset that I define exactly what I mean by a growth of this kind.

By a fibrous tumour of the uterus I understand "a growth" which is developed in some portion of the muscular wall of the uterus; "in consistence" it is dense and hard; "in size" it varies from a small hazel-nut to that of the pregnant uterus at term, or even larger; "its shape" is dependent mainly on its position in the uterine wall in which it is developed; it is invariably, at its circumference, surrounded by a layer of cellular tissue less dense than itself, and which, in the majority of instances, is easily detached from the denser portion which is beneath it. With this definition before you, let us for a few minutes consider the pathology of these growths. These fibrous tumours are developed in the wall of the womb itself; they are composed of the same tissue as that wall; that is to say, they are made up of fibres of cellular and some fibrous tissue—in fact, a fibrous body of the uterus is generally an excessive development of that portion of the muscular wall of the organ in which it is found. Hence has arisen the suggestion that these growths should be named "muscular tumours of the uterus," although, for my own part, I shall always prefer the term "fibrous," seeing that in the majority of instances in which I have examined these growths in the cadaver, I have found them to consist of a tissue more resembling fibrous than true muscular substance. Generally the growth is diffused in texture, and presents to the eye an irregular "mammillated" surface. As a rule, I believe you will find that these tumours are developed singly within the uterus, although the instances are not very rare in which I have seen several springing from the walls of the same organ; and one obstetrician has recorded a case in which as many as sixteen fibrous bodies were found after death protruding into the cavity of the uterus, and some of these were of considerable size. The nutrition of these growths appears to have a close relation to their density, for the harder masses are bloodless, and their injection is impossible; while in the softer varieties vessels of considerable size, that are capable of injection, are found penetrating the growth itself, as well as supplying branches to the layers of fibrous material which connect the lobules of the growth. And now, concerning the position in which these fibrous tumours are developed, I am able to put you in possession of some interesting and important facts. Although it is perfectly true that you may find them in any part of the tissue of the uterine wall, yet, practically, we find that some portion of the uterus is but little obnoxious to their formation; for instance, all authors are agreed that the development of one of these growths in the cervix uteri is a circumstance of great rarity, and my own experience most fully coincides with this statement—in fact, I have never seen a case in which that portion of the uterus can be said to have been the starting point of a fibrous body. Again, we find that in the majority of cases these growths occupy the superior position, and fundus of the uterus. Somewhat rarely they are found in the anterior wall, and my own observation has led me to the opinion that by far the larger number of cases in which these tumours appear singly, they will be found to occupy the posterior wall of the organ near the fundus, and at the bedside, this question of position is of very great importance, as we shall presently see. Obstetricians have generally agreed to deduce from the accidental position in which fibrous tumours are found a classification of these growths, which conveys to our minds at once a correct idea, not only of the position of the uterine wall in which the neoplasm is situated; but also, to a considerable degree, the impression to what extent such a growth is amenable to any form of treatment. Let me then describe to you the various positions in the uterine wall, from which these fibroids take their origin, and they are three in number—*1st. The* sub-peritoneal; 2nd. The interstitial; and 3rd. *The sub-mucous. I will briefly* describe these three varieties, and 1st, of the "sub-peritoneal fibroids." In this form of growth or growths, we find one or more tumours generally of a round or ovoid shape, which spring out of that of the uterine substance that is immediately beneath the peritoneal covering of the organ, and they possess a base of considerable breadth. As their name implies, they are always invested by the peritoneal covering of the uterus, which in the course of their development is carried forward with the growth, so that after a lapse of time, in conjunction with the base already mentioned, a pedicle is formed, which in each instance varies in length, and at times is so long as to allow the tumour to hang more or less freely in the cavity of the abdomen or the pelvis, as the case may be. As a rule, these sub-peritoneal growths are remarkable for their intense hardness and their low vitality; they are seldom the cause of death in women who become the subjects of them. Finally, in connection with the first variety, I may mention that the pedicle of these growths becomes sometimes more and more fragile, until at length by accident being broken, the growth is found completely at liberty in the abdominal cavity, and can be moved hither and thither at pleasure; such an example of this rare condition some of you have recently had an opportunity of witnessing among the out-patients, in a case which was sent to me by Dr. Alexander Fox, who sought my opinion concerning the patient. These growths generally attain a large size, and I have often seen them when they have weighed some pounds. The second variety, as its name implies, the "interstitial fibroid," is a growth contained wholly within the uterine wall, neither encroaching on the uterine cavity on the one hand, nor protruding externally on the other; as a rule, these growths do not attain to the large size which we find in the sub-peritoneal form just considered; there exists with these tumours a distinct boundary formed by cellular tissue of a loose character, with which the growth is so lightly connected, that it may, without much difficulty, be detached and turned out of its investing capsule when the uterine wall which covers it is incised, and their vascular relations to the uterus are not intimate. Now you will readily understand that very early in their progress growths of this sort interfere with the normal shape of the cavity of the womb, and if the tumour should attain to a considerable size, the whole organ rises out of the pelvis. Dr. Graily Hewitt has drawn attention to an interesting fact that now and then these interstitial growths are so shaped that their escape from the pelvic cavity is prevented; and then the functions of neighbouring organs are interfered with, and alarming symptoms present themselves. I can myself fully verify the truth of this observation of Dr. Hewitt's, for I have, on more than one occasion, seen an instance in which an interstitial fibroid developed in the posterior wall of the uterus of very moderate size; but prevented from its irregular form from rising out of the pelvis, has produced by its pressure on the rectum such insuperable constipation, that the patient has succumbed to the symptoms, which, as you know, are attendant on the complete obstruction of the large intestine at its lower portion. The third variety which is again named from the position in which it is developed, is termed the "sub-mucous fibroid;" in every respect it resembles the form I have just described to you; but, growing in the uterine wall immediately beneath the uterine cavity, it projects into that space, and in exact proportion to its size it distends and enlarges the area of the cavity itself, as you will readily understand. Occasionally, beneath the mucous membrane covering the growths is found a thin layer of uterine tissue in a normal state. It is impossible for these sub-mucous growths to enlarge without a corresponding lengthening of the uterine cavity, and that portion of the tumour which impinges into the cavity usually being of a crescentic form, presses upon the opposite wall of the uterus, stretching and expanding it. The position of these sub-mucous growths is various; like the interstitial fibroids, they are "encapsuled," and should the progress of their development be sufficiently rapid they become pedunculated, when they form the growth called fibrous polypi, of which we shall have more to say hereafter; and now I will finish all I have to say to you upon the pathology of fibroids, by making one or two remarks upon the alterations which take place in the uterus, *in any portion of the* walls of which a growth of this character is located.

As soon as a fibrous body which has been developed in the uterus acquires a certain size,—for example, the size of a walnut,—the parenchyma of the uterus, as also the mucous membrane which lines the cavity, undergo positive changes, which, with a little practice, you will readily recognise; although I must tell you that in the cases of sub-peritoneal growths these changes are not so well marked, nor so frequently observed; in fact, I have seen these growths of large size attached to the fundus of a womb which has become shrunken and atrophied; when, however, the growth is of the second variety, true hypertrophy of the whole of the muscular wall of the uterus results, the blood-vessels are actually enlarged, and the mucous membrane becomes congested and tumefied. As in pregnancy, so with these tumours, for after they have increased beyond a certain size they project, not only into the cavity, but also into the neck of the womb, and in the course of their development the inferior segment of the body and then the cervix is encroached upon, so that the neck gets shorter and thinner until the os uteri often presents an appearance similar to that observed when about to open at the commencement of labour. With these changes, of course the cavity of the womb, as a whole is lengthened. You have seen, I am sure, instances in which we have been able with ease to pass the larger portion of the uterine sound into the uterus. And of this lengthening I shall have more to say when speaking of the diagnosis of fibroids. Again, before I recall to your minds how often I have pointed out the fact, that a growth situated in the wall of the womb soon by its weight induces a displacement of the organ, and as a rule, the version resulting inclines to that part of the pelvic cavity which corresponds to the seat of the tumour; thus, a fibroid of *moderate* size in the posterior wall causes a retroversion, and this condition remains until the pelvic wall opposes a barrier to the increase of the fibroid, in which case the development continuing, the growth is supported by the pelvic wall, and then the fundus uteri is pressed against the anterior boundary of the pelvis, so that you will not be astonished to find in those instances in which a retroversion has been observed early in a case, that this condition has been changed to one of anteversion some considerable time subsequently. Again, assuming the fibroid still progresses in size, the pelvis at length becomes too small to contain it; then it ascends, and slowly takes its position in the abdominal cavity; of course, dragging the uterus with it, and hence, when fibrous growths have attained to a large size, we have difficulty in reaching the os tincæ when making a vaginal exploration. Not only are these changes of the uterus itself observed, but alterations in the position of the bladder and rectum ensue. The former viscus, unable to dilate, becomes first irritated, and this in turn goes on to a true catarrh; the rectum also from prolonged pressure in like manner becomes congested, and constantly we are called upon to treat one of the most painful complications of fibrous tumours, hemorrhoids. These vesical and rectal troubles are often the cause of more pain and suffering than the neoplasm upon the presence of which they depend.

Lastly, do not forget when giving an opinion upon a case of fibroid disease, that now and then these neoplasms undergo certain changes which ultimately result in their destruction, or rather, I should say, their degeneration, and in this way the patient becomes cured of her malady. That fibroids are ever absorbed, I do not for one moment believe, but we have, in the post-mortem room, seen instances in which that kind of ossification known by the term calcareous degeneration, has taken place. True inflammation of a fibrous body I have never witnessed, although I have often seen active inflammation of the peritoneum covering a fibroid of large size in the wall of the uterus.

This form of tumour is developed immediately beneath the mucous membrane lining the cavity of the uterus; they project into that cavity; and, as their name implies, their covering is simply an extension of the lining membrane of the organ. Now I remind you of these points because you will presently see that they are surgically of great practical importance. I am able to assure you that the form of disease, the treatment of which we are now entering upon, is capable of the most decided, and, with ordinary care, the most effectually radical treatment. *At starting, however*, I find myself called upon to speak of some operative procedures that have in this and other countries been adopted only to enlist from you their complete condemnation. In the year 1840, M. Velpeau, and, a little time afterwards, M. Amussat, suggested that these hard sub-mucous tumours of the womb should be removed by an operation, which is termed enucleation; their example has been followed by several operators in this country. It consists first of an opening being made into and through the os uteri internum, sometimes by incision, at other times (as in the case related by Sir James Simpson) by the potassa fusa, or, as in Dr. C. West's case, by the removal of one or other uterine lip; the hand is then partially or wholly introduced into the cavity of the womb, and the tumour is "shelled out" from its uterine envelope. You will, even from this brief description, readily understand, I feel sure, that the operation is one attended with great danger, that it is long in its performance, and the statistics of all the operations for the removal of these growths by enucleation go to prove that the chances of the patient who undergoes the operation escaping destruction, either immediately by shock, or a few days later by uterine inflammation, or later still by pyæmia, are very small indeed. Twice I have operated in this way in cases that appeared peculiarly favourable for its performance. The first case occurred to me in 1859, in the person of a widow, aged 36, who had for years been suffering from the hemorrhage and other symptoms caused by the presence of a sub-mucous fibroid, the size of an orange, in the posterior wall of the uterus. This woman was exceedingly anxious, before a second time entering into the married state, to be rid of her tumour. From the moment I began to introduce three fingers into the os uteri, previously dilated by sponge tents, until I brought out two-thirds of the growth, one hour and sixteen minutes elapsed. The patient died, to all appearances of pure shock, two hours and ten minutes after being removed to bed. I operated on the second case in February, 1861. The patient was 40 years of age; the growth was much larger than in the former case. I had previously opened up the cervix to a large extent, and I succeeded in getting away, partly by shelling, partly by the scissors, more than a third of this large tumour. I was compelled somewhat abruptly to finish the operation, in consequence of the gentleman who was administering chloroform assuring me that the patient was getting exhausted. Being placed in bed, she rallied under the free use of brandy and other diffusible stimulants, but she died four days subsequently, with all the symptoms of active uterine and pelvic inflammation. The impression made upon my mind by the disastrous termination of the two cases quoted above, together with the results of the recorded cases of others, have induced me to refrain from ever again attempting this (to my mind) dangerous and hazardous proceeding. Should you wish to become more intimately acquainted with the steps of the operation, I can refer you to the works of Sir J. Simpson, "Obstetric Memoirs," vol. i., p. 118; Dr. West, "Diseases of Women," 3rd edition, p. 305; and to a very able article on the "Surgical Treatment of Fibrous Tumours of the Uterus," by my colleague, Mr. Jonathan Hutchinson, in the fourth vol. of Holmes' System of Surgery. I can only for myself say that I know of no circumstance that should induce me again to attempt to perform this, almost certainly, fatal operation, and the more so, seeing that I shall immediately have to describe to you a surgical proceeding very far less dangerous in its performance, and in my own experience infinitely more satisfactory to the physician, and beneficial to patient in its results.

Dismissing, then, this operation of enucleation, we come to the symptoms of sub-mucous growths, and, following the plan adopted in our second lecture, we must speak first of the treatment of hemorrhage, for you will find that symptom, as a rule, to be the earliest, and very often for a long time, constitutes the only indication afforded us of the presence of a tumour of this kind. At first it appears in the form of a prolonged and profuse menstrual period, the discharge being mixed with clots of greater or less size, the bleeding in each case being ushered in with severe cramp-like pains. After the lapse of time, which varies, as I have before pointed out to you, according to the age of the patient, the size, position, and character of the growth, hemorrhage *between the periods* appears. Now, whatever may be the cause of this dangerous symptom later on in the progress of these cases, the impression on my mind is very clear and distinct that in the earlier stages of the development of these sub-mucous growths the hemorrhage is caused in this way. As soon as the growth has attained the size of a pigeon's egg, the parenchyma of the uterus, as well as the lining membrane, undergo extensive changes, the blood vessels enlarge, first within the uterine wall, subsequently those of the mucous membrane, which soon becomes tumefied and hyperæmic; in fact, a true congestion of the uterus results. Now add to this the displacement, more or less complete, which we so constantly find resulting from the presence of these tumours, and you have, to my mind, a satisfactory explanation of this early hemorrhage; and if you will examine carefully for yourselves, you will soon, I believe, be satisfied that the cause is the one I have just stated.

[In the following remarks Dr. Palfrey describes the operation for the removal of sub-mucous fibroids which he has been in the habit of performing for several years. He does not at the time of operating make any endeavour to remove any portion of the growth itself.]

Having satisfied myself that the tumour I am treating is of the sub-mucous variety, and having carefully examined the patient with a view of ascertaining the condition of her other organs, and particularly her kidney, having carefully for a week or two previously regulated the condition of her bowels, I usually, some three or four days before the commencement of the ensuing menstrual period, have the os uteri leeched. During the whole of that period I advise the patient to remain quietly in bed; and as the decline of the menstruation is indicated, I again have some four or six leeches applied to the cervical portion of the uterus, this time followed by a warm bath. On the morning of the third day from the entire cessation of all bleeding, I administer a gentle purge; and having thus reduced to a minimum the congestion of the uterus, I proceed, on the morning of the fourth day, to operate. (I say on *the morning* of the fourth day, because I have found, in performing any operations upon the sexual organs, that by operating early in the day the patient not only recovers from any sickness or other inconvenience that may follow the administration of chloroform, but also regains before night that mental quiet which every woman loses when aware she has to undergo any surgical proceeding, no matter how simple; so that, as a rule, their night's sleep is not at all interfered with.) Early, then, having had the patient placed upon a firm table—none better than an ordinary narrow dressing table so common to our bed-rooms—and being thoroughly under the influence of chloroform, I have her brought well to the edge of the table, and in the lithotomy position, an assistant taking charge of a knee on either side, which must, during the whole time, be kept well flexed upon the abdomen. I next introduce a Sims' speculum, one of large size, fixed upon a straight handle, which gives greater power in depressing the perineum than the ordinary double-bladed duck-bill speculum. Having brought the os uteri well into view, I give the speculum into the charge of a nurse, who is instructed to kneel at the left of the operator, being prepared with some six or eight small fine sponges attached to long slender handles of cane; with a pair of fine slightly curved vulsellum forceps I then grasp the anterior lip of the uterus, giving the handles of the vulsellum into the charge of one of the gentlemen commanding the knees. Next I introduce *into* and *through* the os uteri internum Sir James Simpson's single-bladed hysterotome, having previously adapted the blade to the identical depth I wish to cut on either side; with this instrument I make a bold and free incision, first into one side of the cervix, then into the other. And here please to remark that this portion of the proceeding differs very considerably from the operation we perform for the relief of those cases of dysmenorrhœa depending upon a narrowing or other mechanical obstruction in the cervical canal; in those cases we cut *up to*, but *not into*, the os uteri internum. Completing the incisions of the cervix, we pause for a moment, for it is at this stage, if at all, we get some free bleeding; and should this happen, do not be at all alarmed; sponge the cervix well out with small sponges dipped in iced water, and in a very few moments the bleeding, *as a rule, will cease.* Certainly, in my own hands it has but on one occasion given us the slightest anxiety, and that case we ought never to have operated, for we subsequently discovered that the patient was the subject of old Bright's disease; and this case is the only fatal one that has occurred to me in 119 operations. The next step is to cut into the growth itself, still preserving the steadiness of the uterus with the forceps in the anterior lip. I next pass into the uterus a very long probe-pointed knife, or rather saw, for it is more like a miniature saw than anything else I can name; this instrument I introduce sideways, guided as far as possible by my finger, wholly into the uterus; then according to the position of the growth either in the anterior or posterior wall, I turn its serrated edge towards the surface of the tumour, and with a slow, yet firm and decided movement, I cut my way into the growth, and, assuming for the sake of description the growth is in the posterior wall, I introduce the index-finger of my left hand into the rectum, and supporting the enlarged uterus in this way, I cut slowly and deeply until the depth of the knife in the growth, and its distance from the surface of my finger in the rectum, lead me to believe that I have made an opening through the greater part of the diameter of the tumour; then turning this saw-like knife with its edge to the right, I make a lateral cut in that direction, and subsequently doing the same into the left portion of the growth. This part of the operation I have never seen attended or followed by any notable bleeding. This finished, it only remains to introduce into the vertical jagged incision in the tumour one or more long narrow strips of lint, well wrung out in olive oil. This step in the operation requires some management, and at first will give you some little trouble. Do not rest, however, until you have firmly and securely plugged the whole of the incision and also the cervix; follow this by plugging the whole vagina with the plug of balls of cotton wool, tied at small distances to a length of whip-cord. This form of plug possesses the great advantage of being instantly removed at pleasure, and, in addition, we avoid the pain and discomfort which attends the use of separate strips of lint or other material, which, if closely packed, as they ought to be, into the vagina, cause some trouble and considerable pain in their removal. Now let me ask you most carefully to practise this plugging; it is, I assure you, a very important part of the proceeding, and the part the careful performance of which effectually protects you from the anxiety, and the patient from the peril of any subsequent hemorrhage. Very much of late years has been written of the dangers of this operation, and on more than one occasion I have been present at our societies when earnest debates have taken place concerning the fatal cases that have, in the hands of operators of the most undoubted skill, now and then occurred. I tell you, fearlessly, that if you will adopt the precautions I have mentioned, you need have but little fears, indeed, of hemorrhage in these cases. Keep your patient well chloroformed until this plugging is over, for it is the most painful portion of the whole operation. To proceed, then, having securely plugged up to the vulva with this continuous plug of cotton wool soaked and wrung out in oil, a thick pad of folded lint upon the external organs, secured by a tightly applied T bandage, completes the operation. The patient is now removed to bed, and I usually at this time administer a third or half a grain of morphia by the hypodermic syringe. Should any sickness follow, I avoid giving anything for a few hours by the mouth, save now and then, a tablespoonful of iced milk, or a little lemon-water ice, which is usually kept down and much liked by the patient. As soon as all fear of vomiting is over, some slight nourishment may be given, followed, if necessary, by a little champagne or other light wine. As a rule, the pain following this operation is not sufficient to demand the regular administration of opium or any other sedative, and I have long discontinued its use in these cases unless called for by special circumstances. Towards evening, or earlier, should the patient complain of distension, the bladder must be emptied by the catheter; and this method of relief must be continued until the whole of the vaginal and cervical plug has been removed. Should no untoward circumstance contraindicate this course, the *vaginal* portion of the plug may be removed twenty-seven or thirty hours after the operation, and the vagina should then be very gently *washed out with a tepid* douche. At the expiration of forty-eight hours I remove the cervical and uterine strips of lint, and then, having again washed out the vagina and lower segment of the uterus, I replug the cervix and as much of the uterus as possible, in the same manner as at first, removing the lint and replacing it every morning. This process is attended with a considerable discharge of an offensive odour. Do not be alarmed at this; it proceeds, I believe, from the softening and breaking down which is going on in the interior of the growth, through the capsule and into the centre of which you have made an opening. Continuing your treatment in this way, you will soon notice a sensible diminution in the size of the whole organ; more especially, however, in that portion of the uterus in which the growth was developed, the organ will become less fixed and more movable. I continue to use the cervical plug until four days before the next menstrual period comes round, and then I allow the uterus a few days of perfect quiet. I cease in every way to interfere either with the tumour or the uterus, and upon the appearance of menstruation your patient herself will become sensible of a marked improvement in her condition; the severe pain which has ushered in the bleeding will appear no more; the bleeding itself will be far less in quantity, and its continuance will be limited to three or four days; the bearing down will gradually disappear—in fact, her troubles will grow less month by month. Careful examination from time to time will convince you that the growth is gradually becoming smaller. Some months will elapse before the tumour will become so small as to cease to be of the slightest importance or cause of danger; but, I assure you, with care this result will be accomplished. I do not tell you that all evidences of the presence of the growth will be lost; such a case has never happened to me, but with the exception of the one fatal case I have mentioned, I have in *no* instance failed in bringing about an arrest in the hemorrhage, and a positive and well-marked decrease in the tumour itself. To go back for one moment in our details. I will observe that it is not necessary to keep the patient on a milk or slop diet long after the operation; usually on the day following I suggest some white fish, chicken, or sweetbread; and by the fifth or sixth day you may safely allow her to resume her ordinary mode of living, nor will aperients be necessary. I always allow the bowels to act themselves. I am sure I have seen serious irritation produced by the premature administration of purgatives after obstetric operations. I advise you to keep the patient very quiet until the menstruation that follows the operation is well over; not that it is wise to confine her to the bed during the whole of that time. My own plan is to remove her to a couch on the third or fourth day, and keep her there during the day until the appearance of the bleeding, when I advise her to remain in bed until it has wholly ceased. Now, you may inquire, and with much propriety, whether the performance of this operation in the manner I have endeavoured to describe to you is attended with equally successful results when the growth is situated in either wall of the uterus? I reply, Certainly not. I can hardly tell you why; but I am convinced that when the growth is found in the anterior wall, the benefit to the patient is less decided and less rapid in its appearance than when the posterior wall is the seat of the disease; not that the arrest in the bleeding is less certain, but I believe the tumour more slowly and less surely undergoes destructive changes when situated in the anterior than in the posterior wall. Possibly this may arise from the circumstance, that when cutting into the growth we do so less deeply and with much more caution, knowing that the bladder intervenes between, our hand supporting the uterus externally, and our knife in the cavity of the organ; which anxiety is absent when cutting into the posterior wall, for in that case we can very accurately measure the distance between the point of our finger in the rectum and the knife in the uterus. I would not have you imagine that I have operated upon these 119 cases without meeting with some difficulties, and not a few anxieties; on three occasions I have had to treat and guide the patients through an attack of pelvic cellulitis; in two other instances pelvic abscess has followed the operation; in both cases, however, this accident has followed premature exertion undertaken by the patients. But, notwithstanding the chance of such untoward *symptoms and accidents* occurring, I am firmly convinced that the results of this procedure are highly satisfactory to the operator, and truly beneficial to the patient. It is no part of my intention, in delivering these Lectures on Fibrous Tumours to you, to occupy your time with the narration of a series of cases to prove the value of the treatment I have just sketched out to you; but I feel confident you will gain some confidence in the operation itself if I briefly put before you the particulars of one or two typical examples; and I will begin with an instance of fibrous tumour in the anterior wall.

On the morning of the 19th August, 1864, Madame K. brought to my house a note of introduction from my friend Mr. Wm. Allingham, of Finsbury-square. I abstract from my notes the following brief history, taken at the time:—"Madame K., aged twenty-eight, married eight years, no children, no miscarriages, was perfectly well until about a year before marriage, when her period commenced to be more profuse than before. This trouble has gradually increased upon her ever since her marriage, and, notwithstanding that she has had the best of advice in Switzerland, in which country she has resided, and also in Paris on various occasions, she is now in a state of complete exhaustion and profound anæmia from loss of blood; has had four separate attacks of hemorrhage in the last seven weeks; her bladder also is extremely irritable, she being compelled to pass her water every twenty minutes, and this trouble keeps her from sleeping at night. A watery discharge always follows the bleeding; she has continual bearing down, but little pain in defæcation." I had no difficulty in recognising a hard sub-mucous fibroid, the size of an orange, springing from the anterior wall of the uterus, which was anteverted and pressing heavily upon her bladder. I pointed out to this lady that I could hold out to her no hope of relief whatever from drugs, and then explained to her the nature of the operation I proposed to perform for her relief. She immediately consented, and a few days after her visit to my house I saw her with Mr. Wm. Allingham, who fully agreed with me as to the nature of her malady, and coincided with me in the advice I had offered. Madame K. having been kept from this time perfectly quiet and constantly nourished, we proceeded on the 24th of September, 1864, four days after the cessation of a bleeding, to operate upon her. Chloroform having been administered by Mr. Wm. Allingham, and assisted by two other gentlemen, I operated exactly in the manner I have described above. I will not tire you by detailing the after treatment, suffice it for me to tell you that the bleeding at once ceased. This lady in a few months wholly recovered her health, and I believe has remained well up to this time. She favoured me with a visit in the summer of 1868, when visiting England; she then assured me she was quite well, and capable of undergoing very considerable fatigue; that she menstruated regularly, her period never lasting more than four days.

Let us next take a case in which the growth was situated in the posterior wall. On the morning of the 12th December, 1867, Mr. Talbot King, of Hackney, brought to my house, for my opinion, a lady, Mrs. C., aged 43, a woman of full habit, married twelve years, never pregnant, commenced to menstruate at twelve years of age; always regular until six years ago, when her period became profuse in quantity, and preceded with severe pain. These symptoms, with the other indications of fibroid disease, have gradually increased, the bleeding during the past year being so serious on more than one occasion as to imperil her life, and keeping her in her room for months together. A long time elapsed before she would allow Mr. King to ascertain the nature of her malady; when he examined her, however, he had no difficulty in detecting a fibrous body of considerable size springing from the posterior wall, considerably dilating and enlarging the cavity, and expanding the neck. The condition of affairs becoming so alarming, the constant bleeding demanding the equally constant use of the vaginal plug, Mr. King persuaded her to see me. I fully corroborated his opinion, and plainly pointed out to Mrs. C. that her only hope of relief lay in an operation. She consented, and on the 27th December I operated. Mr. King in the most kind manner carried out my plan of after treatment, and her progress to health was so steady and satisfactory that I had occasion to see her but once after the operation. He *writes to me concerning* her, in answer to my inquiries, on the 22nd March as follows:—"The operation was most successful; Mrs. C. has had no return of the flooding whatever; she is now in excellent health, and can walk comfortably a long distance."

Now and then pregnancy follows the disintegration and diminution of those sub-mucous growths. Some sixteen such cases have occurred to me; the following is a fair example:—Miss J. aged 26, a tall girl, exceedingly exsanguine in appearance, was brought to my house on the morning of Feb. 26, 1867. I learned that she had been in bad health for several years, her great complaints being intense pain in the uterine region and loins for many hours before each menstruation, and an enormous loss of blood on each occasion; the relative who came to me with this lady described the dismenorrhœa as being "fearful" for hours. This girl had latterly been on repeated occasions delirious with the severity of the suffering, which was aggravated by vomiting and headache. The continuance of these troubles had been followed by epigastric pain after each meal, which had induced this young girl to abstain as much as possible from eating solids. Her bowels were constipated, seldom acting more than once in ten or twelve days, and then with great pain and distress, which arose from a mass of highly irritable hemorrhoids which protruded at each evacuation of the bowel. I was further informed that Miss J. had been under the care of a considerable number of physicians during a period extending over five years. She readily acquiesced in the request I made to examine her uterus, and I found the whole organ very much enlarged, *completely* retroflexed; the body of the organ, acutely bent upon the cervix, lying in the hollow of the sacrum, was exceedingly tender and painful when pressed, and the slightest attempt at moving it was attended with great pain; the cervix was looking towards the pubic arch, which was gaping and œdematous, and also highly sensitive. After very considerable dfficulty I was enabled to pass a fine silver uterine probe 4½ inches into the cavity, and then introducing my finger into the rectum, which was perfectly flattened by the enlarged uterus, I found a growth springing from the posterior wall, bulging into and distending the cavity; the anterior wall of the womb, which was thin, was, by a little drawing down, easily moved over the growth and the probe. I suggested that I should see this lady with her own medical man, and a few days after her visit to my house I visited Miss J. at Peckham Rye, with Mr. Shillingford, who, having then examined her, coincided with me as to the nature of this case. Both the patient and her friend immediately consented to the proposal I made to operate upon this case, I having previously explained to them that in my judgment drugs were wholly helpless to serve her. Mr. Shillingford very kindly undertook the preliminary treatment, and on the morning of the 20th of March, four days after the cessation of a bleeding, assisted by Mr. Shillingford, and Messrs. G. McKenzie and Edward Flint, of the London Hospital, I proceeded first to cut freely into the cervix, and afterwards into the growth. I saw her repeatedly with Mr. Shillingford. She progressed both steadily and satisfactorily; the following period *commencing* in the night during the patient's sleep, and without her knowledge, it lasted four and a half days, and was moderate in quantity. I heard from time to time of this lady's progress, and some seven or eight months after the operation, Mr. W., a member of my own profession, called upon me to ascertain my opinion as to the advisability or otherwise of Miss J. being married. I could see no objection to the step being taken, for I had but a short time before examined her and found her uterus in excellent position, 2¾ inches long, and her general health all we could desire. Shortly after this she was married, and this step was followed by an increase in the quantity of blood discharged at each menstrual period, but without any accompanying pain. Several months later, Mrs. W. called upon me to say she had missed five periods, and she had every reason to believe that she had quickened. I requested her at once to go home and remain in bed during the remaining portion of her pregnancy. I saw her at her residence, at Hackney, a few days after this, in consultation with a Mr. N. Kennett. The fœtal heart at this time was distinctly audible. We did not, for a reason *presently* to be mentioned, examine her internally. I saw her again with Mr. Kennett some weeks later, and promised, should any assistance be required, to be present with him during her labour. On the morning of the 23rd of March, 1869, at half-past eight, Mr. W. called at my house to tell me that his wife was in labour, and request me to go and see her. I had but half an hour previously left London to attend a consultation at Dover, and upon my return from that place, the same afternoon at five o'clock, I learned from Mr. Kennett that he had delivered her safely some three hours before my arrival of a well-grown healthy child. We saw Mrs. W. together; she was then in excellent condition, and I heard subsequently that she made an unusually rapid recovery. It was but a few days since, when passing her house, I saw her nursing a very healthy-looking child at her window. Now I have related to you this case in detail because to me it has proved in all its aspects one of the greatest possible interest and encouragement, and I feel sure it will be equally interesting to every one of you. You will observe that I said that I refrained during her pregnancy from examining this patient *per vaginam*. My reason for not doing so was simply this: While I held the post of Physician to the Metropolitan Free Hospital, we operated upon an exactly similar case. Ten months after being dismissed cured the patient presented herself, being then nearly six months advanced in her first pregnancy, although some sixteen years married. Our then resident medical officer there, being with me at the time, was anxious, like myself, to ascertain the condition of the cervix; we both examined the woman; this was followed the same night by labour pains, and twenty hours subsequently she was delivered by our house surgeon of a boy. This woman has been occasionally under my care at this hospital since that time, but she has never again conceived. I have always entertained a strong impression that we interfered with her cervix sufficiently to induce contraction, which, extending to the uterus itself, resulted in the premature expulsion of its contents.—*Medical Press and Circular*, *April* 14, *June* 23, *and July* 14, 1869, *pp*. 306, 515, 23.

100.—IMPROVED PESSARY FOR FLEXIONS OF THE UTERUS.

By JOHN CLAY, Esq., Professor of Midwifery, Queen's College, Birmingham.

In the treatment of flexions of the uterus I have employed almost every known variety of pessary, both intra-uterine and vaginal, and after a short trial I have found them either inconvenient or inefficient, and have had to discontinue using them. After many experiments I succeeded in devising a pessary which in practice has proved to be very efficient in treating these uterine affections. The pessary is of easy application, and affords great comfort to the patient, relieving her of many of the distressing symptoms which often accompany displacements of the uterus, although from the short time that the pessary has been in use I am unable to state its value in effecting a cure.

The pessary is made of india-rubber. It is, in fact, a small, almost inelastic ball, secured to an ordinary elastic pessary, and is so attached that its axis forms an obtuse angle with that of the larger part of the pessary. It is equally suitable for retroflexions and anteflexions. For an anteflexion of the uterus it is introduced in the following manner: The instrument is dipped in tepid water, and its upper surface then smeared with a solution of gum arabic, to facilitate its introduction. I have used a solution of gum arabic for this purpose for some time, and find it to be a very good substitute for oleaginous and fatty matters, which dissolve the india-rubber and destroy the integrity of the instrument. The pessary is now rolled up on its long axis, and passed under the pubes along the anterior wall of the vagina, until the upper part is passed beyond the os uteri. The pessary is then inflated, which forces the small portion of the pessary into its place—that is, between the uterus and bladder, restoring the uterus to its normal position. When the pessary is sufficiently filled with air the tube is made secure, and suspended to a band round the waist, or placed in some other convenient position. The pessary must be introduced with the small ball looking towards the uterus, for if it is passed in the opposite direction the upper extremity would press on the bladder, and the lower portion would exert undue pressure on the uterus. The inflation of the pessary may be effected either by the mouth or by means of Higgison's syringe, the two being connected by means of a small piece of india-rubber tubing.

For retroflexions of the uterus, it is only necessary to pass the pessary along the posterior wall of the vagina—reversing, in short, the introduction of the pessary to what obtains in cases of anteflexion.

The pessary was constructed, under my directions, by Messrs. Salt and Son, Bull-street, Birmingham.—*Lancet*, *Sept.* 25, 1869, *p.* 434.

101.—NOTE ON THE USE OF CARBOLIC ACID IN OBSTETRIC PRACTICE.

By Dr. J. G. Wilson, Professor of Midwifery in the Andersonian University, Physician-Accoucheur to the Glasgow Maternity Hospital, &c.

It is now upwards of a year since I first employed diluted carbolic acid as an intra-uterine injection after parturition. The first case in which I tried this antiseptic injection was one where the symptoms were such as to lead me to apprehend an attack of puerperal septicæmia. In the case referred to, the patient, on the third day after delivery, suffered from considerable tympanitic distension of the abdomen, with pain and tenderness on pressure over the hypogastric region; the lochial discharge was scanty and fœtid, and there was a good deal of general febrile disturbance of the system. The result in this instance was so satisfactory that I was induced to give this plan of treatment a further trial in such and similar cases. Since then I have frequently syringed the uterine cavity with a weak solution of carbolic acid, not only in cases where the lochial discharge was offensive and deficient, but in a variety of other cases. Such, for example, as those anxious and troublesome cases in which there is reason to suspect retention, *in utero*, of a portion of the placenta or membranes, consequent upon or resulting from abortion, retained or adherent placenta, &c.; also in cases where the infant is born in a semi-putrid state, morbid conditions of the placenta, decomposing coagula in the utero-vaginal canal, &c., &c. That carbolic acid has proved of decided value in many such cases I have not the slightest doubt. Still, I am not prepared to ascribe all the benefit to the carbolic acid as an antiseptic; I think that the very washing out the uterine cavity is of itself a very important matter, and is entitled to some consideration in estimating the value of this mode of practice. I may mention that this plan of treatment has been tried in the Glasgow Maternity Hospital, and, generally speaking, with good results. I may also state that previous to using the carbolic acid I employed the permanganate of potash, both in private and hospital cases.—*Glasgow Medical Journal*, *May*, 1869, *p.* 322.

102.—ON A CASE OF OVARIOTOMY.

By Dr. Alfred Wiltshire, Medical Inspector H. M. Privy Council; late Senior Physician to the Islington Dispensary; and Dr. William Tyndale Watson, Dublin.

[In the following case there was acute peritonitis at the time of operation. The patient was 49 years of age and had had nine children. She first noticed some abdominal enlargement in March, 1867, and this enlargement gradually increased until seen by Dr. Watson. She at that time was suffering from incessant vomiting, tenderness of the abdomen, quick and hard pulse, hurried respiration, and hot skin. Dr. Wiltshire was called in on the evening of the 3rd of May.]

Dr. Wiltshire's notes are as follows: May 3rd, 1868. I was called down to Tottenham to see Mrs. S., aged 49, in consultation with Dr. Watson. I found the patient lying in bed with her knees drawn up; countenance haggard and anxious; skin cold; pulse 105 and very feeble; indeed, scarcely to be counted. The tongue was moist and only slightly furred. The extremities were quite cold; and the pressure of the finger left a white spot in the midst of purple skin, the capillaries of which did not soon refill. The abdomen was very large and tender. There was a large hard tumour centrally placed, and it was round. There was fluid in the peritoneal cavity. Vaginal examination gave evidence of the existence of a tumour, which filled the pelvis and pressed much upon the rectum. It feels solid, but it was thought that the feeling of solidity was due to extreme tension. The uterus was normal in size, but somewhat drawn up; and the vagina was thus elongated. Examined *per anum* the tumour was felt to press much upon the rectum. The urine was said to be in small quantity, but, probably, it was so frequently passed that the friends were deceived as to the quantity. It was free from albumen. There had been constant vomiting since May 1st; and she had retained no nourishment during that time. The diagnosis was ovarian cyst (most likely without adhesions), which had suddenly become enlarged, owing, probably, to the long walk on April 30th. Peritonitis due to sudden change in tumour. As to the possible malignancy of the tumour a doubt was expressed, seeing that the aspect was peculiar, but it was thought that the loss of blood would account for the tint of skin. My (Dr. Wiltshire's) advice was, that the patient should have a nutritive enema containing opium and brandy, that ice and champagne should be frequently given, and that on the following day, should her condition have improved, the operation of ovariotomy should be performed, and, should that not be possible, that the cyst should be tapped for the purpose of giving her relief from the extreme distension of which she complained very much. My friend, Dr. Watson, reluctantly concurred in this.

On the following day, I went down to Tottenham, intending to perform ovariotomy, should the condition of the patient permit it. Dr. Murray kindly accompanied me, and gave Dr. Watson and myself the advantage of his opinion on the case, which was to the effect that most likely there were adhesions, and that probably the tumour was a rapidly growing cancer. Both Dr. Murray and Dr. Watson urged that, as the woman certainly had peritonitis, and as her condition was one of such extreme depression and collapse, it would be very undesirable to operate. However, as the patient was desirous of having something done, asserting that she knew she could not live long, and that she would be glad of some relief from the distress she suffered from distension, and as I felt strongly that the right thing to do was to operate, I pressed the point; for, although it was difficult to give one's reasons, chapter and verse, yet, looking at the case from the fairest point of view, I felt persuaded that it was the right course to pursue. To leave her alone would be to stand idly by and see her die unrelieved, while I thought that, though the case was desperate, yet an operation might possibly give her a chance of recovery by removing that which I regarded as the cause of her acute trouble, viz., the rapidly enlarging mass. My friends reluctantly yielded; and, as the patient gave her consent, having been promised that if her case proved very unfavourable for extirpation I would only do something to relieve her, viz., tap the cyst, I proceeded, with the kind assistance of my friends, to operate. Dr. Watson very skilfully gave chloroform, and, as well as Dr. Murray, otherwise aided me materially. Having placed the patient on the side of the bed, I proceeded to incise the abdominal wall. On reaching the peritoneum, about two pints of glairy yellowish red fluid escaped. Immediately on this a large black mass shot up into the incision. The appearance of this mass was like that of a huge hemorrhoid or the amniotic surface of the placenta. I ascertained that there were no adhesions, but that the size of the mass was very large. I tapped it with Dr. Murray's trocar, and first of all about half a pint of reddish serum escaped, followed by dark venous blood which flowed out to the amount of a gallon. It seemed, in fact, as though I had tapped a venous aneurism. As no more would flow, the trocar was withdrawn, but still the tumour remained of considerable size and was semi-solid. I found it necessary to enlarge the abdominal incision to more than an inch above the umbilicus, and I then proceeded to lift up the mass, which, in the act of lifting, rent on the side opposite to that on which it had been tapped. A pint or two of blood and clots escaped over the intestines, which, as Dr. Watson remarked, were of a bright red, and, from the brilliant injection, were evidently in a state of acute inflammation. Dr. Murray urged me to get the mass out as speedily as possible, *fearing the patient would sink*; and having lifted it out of the abdominal cavity, he (Dr. Murray) put a stout ligature of silk around the pedicle, which was very short and small. Having severed the pedicle, I turned to put the tumour into a large bason. As I was in the act of turning, Dr. Murray exclaimed: "The ligature's off; she will bleed to death." When I turned to the patient, I found that a stream of arterial blood was issuing from the pedicle, filling the pelvis, obscuring everything. I seized the whole uterus, and having forcibly lifted it up, thus straining the vagina very much, I held the pedicle between my finger and thumb while Dr. Murray put on a small clamp. This, however, would not hold, as the pedicle was so rotten. Afterwards double silk and silver ligatures were applied, but nothing would hold; and, in sheer desperation, and with a view of arresting the hemorrhage, as a *dernier ressort*, I transfixed and tied the right half of the body of the uterus. The bleeding being thus arrested, I cleansed out the peritoneal cavity and stitched up the wound with deep and superficial silver sutures, and put on some dry lint and a bandage. The operation occupied just one hour. Dr. Watson observed, and Dr. Murray and myself verified, the fact that the pulse improved under chloroform. There was very little sickness. The patient was placed in bed and hot bottles put to her feet; and, when visited again in an hour, was found to be very comfortable, and expressed herself as feeling much relieved. The pulse was fuller and the skin warmer. An enema, containing a drachm of tincture of opium, four ounces of beef-tea, and one of brandy was given. Pulse 104, firm.

7 p.m. Pulse 124. Retching was relieved by ice and champagne. She had dosed a little, and was cheerful. A grain of powdered opium was ordered. At midnight the pulse was 120. The enema was repeated. She had vomited several times. The tongue was moist. The ice and champagne were continued; and the pill was repeated.

Mar. 5th, 11 a.m. Pulse 105. She had dosed through the night. She had no pain, and was cheerful. She had taken some beef-tea and wine. She had nausea. 3 p.m. On visiting her with Dr. Wiltshire, the pulse was 105. She took wine and beef-tea. The tongue was clean. She was brighter and her condition was very promising. Ice was taken frequently. The wound was clean and uniting. There was no abdominal distension. The pill was repeated.

May 6th, 1 a.m. She was cheerful. The tongue was moist. Pulse 90. 11 a.m. She had slept during the night. Pulse 85. She was not in pain or sick. She took wine and beef-tea, ice, and champagne. The enema was ordered to be repeated, and the pill to be taken at bedtime.

May 7th. Pulse 150. She had frequent nausea. The tongue was moist; the abdomen flaccid. She had no pain, slept much during the night, and was cheerful. The enema was ordered to be repeated.

May 8th, 11 a.m. She had had no sickness, had eaten some bread and butter, and had slept well. Pulse 87. There was no pain.

May 9th. She was much better in every way. The bowels had acted. Pulse 108.

May 11th. Pulse 100. There was no sickness. She had taken port wine.

May 12th. She was going on well.

May 18th. She ate a chop to-day.

The patient went on admirably, and perfectly recovered without a single bad symptom. There were never any rigors, nor was there a single drop of pus formed. The sutures were removed on the 16th; the wound was firm and sound. The patient went out at the end of three weeks; and, when last seen by Dr. Watson, in the middle of July, was walking about enjoying good health.

When we examined the cyst, we found it to be multilocular and to contain blood, some clotted and some semifluid. Where the rent had taken place, in the act of removal, the cyst-wall was remarkably thin and friable; and it was evident that, had it not been removed, it must inevitably have burst in the course of a few hours, since blood was continually poured into its cavity; and, as the mass had become twisted upon its pedicle, the veins were strangulated, and thus the escape of blood was prevented.

The tumour was exhibited on May 5th, at a meeting of the Pathological Society, and was subsequently presented to the Museum of the Obstetrical Society.

Dr. Murray informed me that microscopical examination gave no evidence of malignity.

Remarks by Dr. Wiltshire.—The case above related will be recognised by everyone as extraordinary; indeed, it is unique.

Both Mr. Spencer Wells and Dr. Keith of Edinburgh, who saw the tumour at the meeting of the Pathological Society, agreed in regarding the case as one of extreme interest. Mr. Wells, in expressing his opinion upon it, said that he regarded it as "a leading case in science;" for to operate deliberately upon a patient labouring under peritonitis was an entirely new principle.

Mr. Wells was kind enough to say that the authors of the paper deserved the thanks of ovariotomists, since the case related showed how much might be done in cases which appeared so desperate as to be beyond hope.

Dr. Arthur Farre kindly gave me the particulars of a case which in some measure resembled mine. A young lady, a patient of Dr. Farre's, had an ovarian tumour, upon which it was determined that Mr. Spencer Wells should operate. When the peritoneal cavity was opened, Mr. Wells found a patch of peritonitis, the existence of which, up to that moment, had not been suspected. The presence of this patch of peritonitis naturally caused much concern, but the operation was proceeded with, and the tumour removed. This young lady made a perfect recovery; and I think I understood Mr. Wells to say that she had since borne several children.

I submit that these two cases go to prove that we are too much afraid of acting vigorously when we have to deal with the peritoneum. I believe that it is only in the cachectic that we need fear evil results, and that only in those unhealthy patients in whom, when the subjects of peritonitis, creamy lymph is poured out, do bad consequences follow operations, which, though bold, are yet well considered. I saw Mrs. S. in November last. She was then stout and well; and, on examination, the abdomen and uterus were found to be quite free from anything indicative of disease. I have again seen Mrs. S. during the present month, and, except that she is troubled with dyspepsia, she is very well.—*British Medical Journal, July* 17, 1869, *p.* 52.

103.—A NEW METHOD OF TREATING THE PEDICLE IN OVARIOTOMY.

Dr. Julius F. Miner in the Buffalo Medical and Surgical Journal (June, 1869), advances what will seem to most surgeons to be a very startling proposition—namely, that in many cases, ligatures, clamps, or cautery, may be dispensed with in the operation for ovariotomy, and the pedicle returned without danger. His opinion is formed upon a case in which he removed an enormous ovarian tumour by the following operation:—

"The tumour was multilocular, very large, weighing, as near as could be ascertained, between seventy-five and one hundred pounds. It was attached throughout its entire circumference to the omentum, intestines, walls of the abdomen, and all other parts with which it came in contact. These attachments were not so firm but that they could be broken up, and with great care the tumour was separated from the surrounding parts until the pedicle was reached. The process of enucleation had been carried on so extensively and successfully that encouragement was afforded for continued trial. The pedicle was large, and extended over a wide surface, but by patient and gentle effort it was separated from its entire attachment to the tumour, and the immense growth removed without the ligation of a single vessel. The terminal branches of the vessels of the pedicle gave out no more blood than issued from the vessels of the attachment elsewhere, and there appeared no more occasion for ligature here than elsewhere. All hemorrhage soon ceased, and the incision was closed by interrupted suture." Dr. Miner adds: "The ovarian tumour is generally composed of a firm, dense, fibrous cyst, containing fluid of very varied colour and composition. It may, and it may not, have a solid portion, but usually it does have more or less of a body, the remnant of an enlarged or degenerated gland. Upon the surface of this smooth dense cyst are spread out the vascular, fibrous, cellular, and other tissues which compose the pedicle, but only the terminal branches of the vessels enter this cyst; the vessels may be quite large at their origin, but soon they are numerously divided and enter the cyst, if at all, of capillary size. The attachment of the pedicle to the cyst is more easily broken than any one would mistrust who has not attempted its separation in the manner described, and I am confident that the same efforts which are made to break up adhesions to the peritoneum, omentum, and other parts, if extended to the pedicle, will, many times, be equally successful."

In cases where this method of enucleation without ligature may be found impracticable, Dr. Miner advises a modification of the principle of acupressure —"that is, a needle with ligature attached, passed transversely through the pedicle, weaving it in such manner as to make pressure upon the vessels sufficient to arrest the circulation. Where this method can be made effectual, it approaches very near in point of favour to enucleation without ligature, since the needle can doubtless be very early removed, and the parts beyond the point of its introduction need not be strangulated or the vitality destroyed so as to produce sloughing."

The plan of enucleation thus suggested is eminently worthy of trial by other surgeons, and should subsequent experience confirm its practicability, ovariotomy will be shorn of some of its most hazardous features. The well-known variability in vascularity of the pedicle of ovarian tumours, however, renders great caution advisable in determining the cases wherein this method should be attempted.—*Medical Press and Circular, Aug.* 25, 1869, *p.* 165.

104.—ON SEA-TANGLE TENTS.

By Dr. J. Braxton Hicks, F. R. S., Physician-Accoucheur, and Lecturer on Midwifery at Guy's Hospital, &c.

[Of all the materials used for dilating the cervix uteri none are so cleanly and efficient as sea-tangle. If it is required to dilate the part to a considerable size it will be necessary to combine three or more tents, as the stem of the alga does not exceed a certain size.]

I have found that they distend to about three times their original diameter, and that in an ordinary state of the secretions they reach their full distention in about fifteen hours; of course some variation will be found in this respect, especially between the different sizes, for the larger they are, the longer the time occupied for them to become wet in their interior, and therefore, generally speaking, the large bundles produce their effect quicker than if made of one piece of an equal diameter to the combined. These two points are important to bear in mind, because where we have to dilate the cervix to a considerable size, and we require to follow in succession, it is best to introduce the next sized tent as soon as the previous one has attained its full dilatation. To leave it in beyond that time not only delays the operation uselessly, but adds much to the chances of uterine irritation. We must therefore have at hand a series of three for general purposes. For instance, when we wish to dilate the cervix in order to pass the finger in easily into the cavity, supposing we begin with one of ⅛ inch diameter; the next size should be nearly ⅜ inch, and the last (if another be required) should be nearly one inch diameter: as this would expand to nearly three inches at its fullest, it would not be requisite to allow it to remain in—unless in a case of pregnancy or imperfect miscarriage, where we want the fullest expansion—so long as to its complete expansion, say for ten hours. Where slight dilatation only is required then one is sufficient, and it should be removed in twenty or twenty-four hours at the longest. For dilating further, we may group the smaller bundles in any numbers we like, but it will seldom be required to go beyond an inch diameter for the last one. It we wish the tents to be more rapid, then it is best to soak them in cold water a short time before introduction.

The purposes to which they can be applied for obstetric purposes are numerous. They can be employed to dilate the smallest os and cervix uteri, either alone or in preparation for the hysterotome; they can for this purpose be made as small as required. In the case of traumatic closure of the os uteri, I have employed it with complete relief. In closures of the vagina from injury, also where the opening is reduced to a pin-hole, they may be employed to dilate up the stricture, preparatory to some more radical operation, or in some cases they may be employed entirely. The effect of the latter plan, however well it may succeed at the first, is liable to pass off, and the contraction to resume its sway. I have found that the bistoury lightly drawn over the contraction, in numerous places, attended by much more satisfactory results ultimately. After operation for opening either vagina or os uteri, these tents may be employed from time to time to prevent the closure recurring. They may be employed to dilate the cervix to a size sufficient to permit us to explore the interior of cervix or the body of the uterus, in cases where polypus is suspected, or where the remnants of an imperfect abortion is supposed to exist. For the same purpose they are of great value to permit us to diagnosticate between polypus and fibroid tumour of the uterus, where the hemorrhage is so great as to require interference.

In cases of flexion of uterus they will assist to straighten out the canal of the cervix, and for a time relieve the patient of the dysmenorrhœa which frequently accompanies it.

Again, in cases of dysmenorrhœa and sterility in married women from contraction of cervix, they can be with great advantage used, because it is clear if the sterility be owing to the occlusion of the cervix, then its expansion should be attended by immediate relief; otherwise we may conclude that other causes exist which give rise to these states, and if after this dilatation the patient conceive, then a permanent cure results. In the single woman, however, the effects are less permanent, and in cases of severe obstruction will be frequently the only means of giving anything like permanent relief.

In some cases, as in malignant disease of cervix where the resistance is considerable, I have employed this substance to dilate, in order to deliver prematurely. These cases however are rare where much resistance exists, and in general it will be better to employ a softer material, as sponge tent, or elastic dilating bag, because they are less likely to scratch and abrade by their extremities than the more rigid sea-tangle tents.

They can be introduced into the cervix uteri in various ways.

First, they may be introduced by a long pair of forceps. The patient being placed on her left side, the forefinger of the left hand, or still better, two fingers, if possible, are to be passed to the os uteri. The tent, held by the forceps, is carried along the finger to the os, into which it is introduced. The handle of the forceps should be then brought well against the perineum, so as to throw the tent into the axis of the uterus (in cases of normal position) and very gently pressed forward; after it has passed in nearly its whole length, the forceps should be detached, and the forefinger pressed gently against the end of the tent to keep it *in situ*. In order to retain it there, it is well to pass a plug of sponge with a tape tied round it so as nearly to fill the vagina. It is well to see the urethra is not pressed on, or retention of urine might ensue, causing trouble and alarm. In multiparæ there is no trouble in employing this plan, but in some, particularly in virgins, there is much difficulty in introducing the tent, in consequence of the rigidity and drawing up of the perineum. Besides, unless the serrations of the forceps are carefully rounded off at the edges, the vulva and vagina may be scratched, not only causing pain, but adding to the difficulty of introduction in consequence of the movements of the patient.

Another, and in my experience a better plan, in cases where the extremely small tents are not required, is to employ an elastic catheter with a stillet. A portion of the end of the catheter not quite so long as the tent should be cut off. This will leave the stillet protruding. On this the tubular tent should be passed, care being taken to see the stillet does not extend beyond the end of the tent. The string which is attached to the lower end of the tent being carried down by the side of the catheter, is held by the same hand. The arrangement is then introduced as an ordinary uterine sound, and when the tent is properly within the cervix, the stillet is withdrawn, thereby leaving the tent in the cervix. The finger which is in the vagina should be placed on the lower end of the tent to prevent it sliding out, and the sponge introduced as usual. A very convenient little instrument based on this principle has been made by Messrs. Weiss.

There is another mode which will be convenient in some cases, namely, to pass a speculum. Having introduced the tent into the cervix as far as possible by a forceps, the speculum can be withdrawn carefully. A finger is then passed up to the tent, and gentle pressure being made the tent slides in. This plan is good in cases where retro- or ante-flexion exists, but then of course it will be necessary when pressing the tent in with the finger to vary its direction, either forward or backward, according to the axis of the body of uterus. In these cases the tent is ultimately placed in the transverse diameter of the vagina. In cases where the inner cervix will not permit the tent to pass, I have managed to do so slowly, by lodging the lower end against the fold in the posterior wall of the vagina, and then plugging that canal as usual. The little irritation produced by this has caused the levator ani to act, so that a gentle pressure is exerted for some time against the inner os, which has ultimately yielded. For the larger groups of tents, it will be found that the forceps will introduce them most readily; for in most of the cases where we wish to use large tents, the vagina is so well relaxed, difficulty is rare.

It is very important in order to effective dilatation that the tent should pass the inner os in all cases where the cavity of the uterus is to be explored. Tents of all kinds may fail in this particular, for two reasons: one because they may not have been introduced so far; and another, because they slip out. This is particularly the case with the sea-tangle tents, but as they can be made smaller than any other kinds, there is no reason why, if one will not pass, a smaller should not be tried.

In conclusion I may point out the special advantages of tents made of seaweed.

1st. They can be made of any size, particularly much smaller than sponge tents.

2nd. They have more distending power. The rigidity of the inner os uteri is sometimes so great that even these tents are distinctly marked by it; but the sponge tents not at all unfrequently are unequal to produce any marked impression on the constriction.

3rd. They do not retain the secretions so as to produce so much offensiveness, consequently there is less risk of irritation locally or generally.

4th. By their greater rigidity they can be more readily applied, especially in a tortuous canal.

They have, however, some disadvantages:—

Their rigidity makes them not so suitable in cases where the uterus is readily bleeding, or very tender; nor in cases where the os is somewhat dilated by a polypus or growth distending it. Here a sponge tent is best, unless the os and cervix are very rigid.

Their great distensive force makes them less acceptable where the uterus is very irritable.

They should be in all cases so made that no sharp edge be noticeable. In the tubular tents this is a point liable to be overlooked.

And for the dilatation of the os uteri in a natural state for purposes of induction of premature labour these tents are not by any means so suitable as the sponge tents, or as the India-rubber bags.

With these exceptions, in cleanliness, certainty of action, ease of introduction, and minuteness, they are certainly not equalled by any other material at present in use.—*Practitioner*, *August*, 1869, *p.* 84.

105.—ON SPONGE TENTS.

Knowing the fact that absolute or *strong* alcohol will quickly *set* the fibres of common sponge, after having been moulded or compressed into any given size or shape, I was led to the following quick and easy method of preparing sponge tents, tampons, &c.:—The sponge is first thoroughly moistened with water and pressed as dry as the strength of the hand will permit; then having formed it into the desired shape and size by the hand, or by pressing into a quill or any other tube or mould, it is immersed into the alcohol. If the spirit is sufficiently strong (90 to 100 per cent.) the sponge is *immediately* set into the given shape, which it retains perfectly after the pressure or mould is removed. It is then hard, firm, and inflexible, and may be trimmed to a sharp point or any other desired shape. To restore it to its former size and shape it is only necessary to moisten it with a few drops of water. The alcohol sets the sponge perfectly, whether the amount of compression be much or little, so that the degree of dilatation, attainable by the use of tents thus prepared, will, of course, depend upon the size after moulding and the degree of pressure used. . As this process of preparation works perfectly and *without delay* its advantages are obvious.—*Dr. J. B. Hough, in Cincinnati Lancet and Observer.—Medical Press and Circular, Aug.* 18, 1869, *p.* 155.

106.—CASES OF HEMORRHAGE FROM THE EARS, EYES, ETC.

By Dr. Robert Law, King's Professor of the Institutes of Medicine; Physician to Sir P. Dun's Hospital; and Consulting Physician to the Adelaide Hospital.

[While there are few if any organs of the body which are not liable to be the vicarious outlet of blood in cases of suppressed or insufficient menstruation, it appears to exhibit an especial predilection for a weak or suffering organ.]

While the lungs and the stomach are the organs from which these hemorrhages most frequently proceed, yet the cases which we are about to detail show that other organs also share in this tendency.

Some years since I brought under the notice of the Association of the College of Physicians, a case of vicarious hemorrhage from the ears, and which Dr. Churchill considered of sufficient interest to give it a place in his valuable book on midwifery; but as the abstract which I supplied him is not very full, and as there is no other record of the case, perhaps I may be permitted to advert to it in order to compare it with another with which it has some points of resemblance and some of difference. The subject of the case, Mary Murphy, aged 21, was admitted into Sir P. Dun's Hospital, complaining of violent pain of the head, which she ascribed to her having stopped too long in the sea when bathing. On the night of the day of her admission into hospital, she bled and largely from both ears. She complained of pain in each ear, of a distressing sense of fulness which she felt in her head generally; the temporal arteries beat strongly, the face was flushed, while she said her feet were cold. The menstrual discharge had been suppressed for several months, during which she had all the symptoms of which she now complained, but in a less degree, and without the bleeding from the ears.

We directed leeches to be applied behind each ear, that she should have foot bath, and aloetic purgative medicines. These means relieved her, but she bled again from the ears on the third night. We continued the same means, but in addition had leeches applied to the interior of the thighs. The indications of treatment, which we steadily held in view, and upon which we acted, were to divert from the head and to determine to the uterus, and at the same time to strengthen the constitution.

She was a considerable time under care, and it must be confessed we had but little to boast of as to the success of our treatment, only that the intervals of the bleedings were prolonged, but there was no appearance of the return of the menstrual discharge. The hemorrhage from the ears, which occurred frequently, was always announced by an unusual sense of weight in the head, pain of the ears, and throbbing of the temporal arteries, flushing of the face, and coldness of the feet. Although the head was much relieved by leeches and warm foot baths, still she said that this relief was nothing compared to what followed when she bled from the ears. While her feet were constantly cold, her face was as constantly hot and flushed, and during her stay in hospital, which was many months, she had on three different occasions erysipelas of the face. She had one very profuse discharge of blood from the ears, and after it seemed to improve so much that I advised her to leave hospital, hoping that she would be benefitted by a change, although not expecting much while the menstrual discharge was not restored.

She left the hospital, but was not long out when she got hematemesis, of which she had repeated returns, with occasional bleedings from the ears.

She first came under my care in June and left early in Dec.; she was re-admitted into hospital on the 1st of the following month, and between this and 27th of April she bled twice from the ears, and discharged repeatedly from the stomach large quantities of dark grumous blood. The other symptoms then present were violent headache, severe darting pain in right ear, with pain between her shoulders and across the loins. On the 9th of June, these symptoms were much aggravated, and on the evening of that day she had a more copious hemorrhage from the ears than she had ever had; her sheets were literally soaked in blood. She now told us that she had had, as nearly as possible about a month since, a slight appearance of the menstrual discharge.

She now became affected with diarrhœa, attended with violent pains through the bowels, which only yielded to large doses of opium often repeated. Her health now improved considerably, and for six weeks before she left us she had no discharge of blood of any kind. She ultimately got quite well, but not until the menstrual discharge was restored.

Mary Anderson, aged 80, servant; unmarried, a stout, strong-made woman, was admitted into hospital complaining of distressing soreness of her stomach and pain in her left shoulder, and extending down the arm, which was rigidly flexed, and the least attempt to move it caused great pain. Pulse 54, with respiration short, hurried, and nervous, jerky—face flushed. She exhibited a peculiarly nervous, frightened appearance. Just before her admission into hospital, she discharged a large quantity of blood from the stomach. She states that five months before this, her illness began with pain in the left shoulder, extending through the arm, and even to her fingers. At the same time she had pain of the stomach, and constant vomiting. She was ill a month when she discharged from the stomach a large quantity of blood. She was now carried to bed in a fainting state, and did not leave it for two months, during which time her arm became swollen and powerless, and very painful. She now got better, but the amendment did not last. She was seized with the vomiting of blood, which caused her to be removed to the hospital. She observed that the vomiting of blood returned every month, and that the menstrual discharge, which occurred at the same time, was regular generally both as to time and quantity. Leeches were applied to the shoulder, and relieved it, and she was ordered such medicines as her nervous symptoms indicated. She had been five days in hospital when the report was, her nervous symptoms are much less, respiration more natural, pain of arm less, but she complains of pain and stiffness in left leg. She also complains of pain along the spine, between the shoulders and loins. She was admitted into hospital February 12, and on the 21st she bled from the *eyes*. She complained much of sickness of stomach, and stiffness of left leg. The left arm much less stiff, respiration much more natural and free.

23rd. Has considerable pain in left popliteal space and groin, the vein all along the leg has a corded feel and is painful, especially in popliteal space and groin. Leeches were directed in the course of the vein, and stupes.

27th. The arm is quite free, the leg still painful, and vein hard and corded, particularly near the foot, the dorsum of which is swollen and painful; face flushed, eyes suffused.

March 2nd. Has bled very much from right eye. The vessels of both conjunctivæ very much congested. Condition of leg improved, less stiff, and less painful.

3rd. Has a peculiar nervous tremor of the eyelids.

5th. Menstrual discharge now present; had epistaxis this morning.

9th. Bled again from the nose.

10th. Menstrual discharge has now ceased, having continued five days. She complains of numbness in leg.

25th. Is much stronger, and has more use of leg. Has had slight epistaxis, which relieved a feeling of weight in her head.

31st. Again complains of pain in left shoulder; has copious lachrymation, and a serous discharge from the ear; skin bathed in profuse perspiration.

April 1st. Bled a little from the eyes.

2nd. Menstrual discharge now present.

5th. Menstrual discharge has ceased.

May 11th. Since last report, has been gaining strength, and feels herself quite well, except that the left leg is not strong, and makes her a little lame.

This case differs from Murphy's in this remarkable particular, that while in the latter there was complete amenorrhœa, in the former this discharge appeared normal both as to time and quantity, and still this quantity did not seem to satisfy the system. There was besides the hemorrhage from the eyes, the epistaxis hematemesis, a serous discharge from the ears, profuse lachrymation and profuse perspiration; and that these hemorrhages bore some relation to the menstrual discharge would appear from their coming on at the same time as the menstrual discharge. In Murphy's case there was the bleeding from the ears, the hematemesis, and diarrhœa. I should also place with these the erysipelas of the face as having a relation to the other symptoms.

Everything connected with Anderson's case bespoke aggravated hysteria. It exhibited to us a remarkable instance of what is often observed in hysteria, the interruption to the normal ratio of the respirations and pulse, the former so much exceeding the latter—as first noticed by Dr. Elliotson. The hurried, short, jerky respiration, auscultation not detecting the entrance of any *air* into the lungs, was characteristic. The painful and swollen condition of the upper extremity, and on its being relieved, the affection of the lower extremity in the form of phlebitis, are interesting epiphenomena, and reminded us, in the case of the affection of the lower extremity, of what not unfrequently comes on in the course or towards the termination of fever which has been attended with nervous symptoms—not very unlike phlegmasia dolens—but which occurs in men as well as in women, but more frequently in the latter (independently of the puerperal state), from their greater nervous susceptibility.

The records of medicine furnish us with cases of hemorrhage both from the ears and eyes, but they are few. We had expected to have found them noticed by Frank in his very full observations, "de profluviis cruentis," but there is no mention of them there. He seems, however, to have got a glimpse of the vaso motor functions of the nerves, and regrets that the subject has not had the measure of attention bestowed upon it that its importance entitled it to.

I have little doubt but that when our knowledge of the influence of the vaso motor nerves has increased, we shall then and there find an easy explanation of many of those strange phenomena which are met with in hysterical affections, as well as in others of a nervous character. We observe this influence very strikingly in various cutaneous affections, as in herpes zoster, whose dependence on the nervous system is now generally admitted. We conceive ourselves warranted in regarding the erysipelas of the face, which occurred three times with Murphy while under our care, as more than a mere accidental complication, and that it bore a certain relation to the hemorrhage. In the same light we regarded the lachrymation and profuse perspiration in *Anderson's case*, in which nature was not alone not satisfied with the menstrual *discharge, which* appeared normal both as to quantity and as to the period of its coming, but required besides the discharge of serum from the ears, of blood from the eyes, stomach, and nose, and further still, this profuse lachrymation and perspiration. Perhaps we may be warranted in looking upon the diarrhœa that occurred in Murphy's case in the same light as supplementary to the hemorrhage from the ears and stomach.—*Dublin Quarterly Journal, May*, 1869, *p.* 313.

ADDENDA.

107.—ON CHLORAL.

By the Editor of the Lancet.

Chloral, the new hypnotic and anæsthetic, as its author, Liebriech of Berlin, defines it therapeutically, has become a subject of interest in England at a fortunate period,—that is to say, at a period when, in the absence of all other topics of a like kind, it can stand alone, and invite universal attention. To this circumstance it owes an unusually fine introduction to the medical world; but it has, stripped of all the exaggerations which have been made concerning it, qualities that give to it real significance. The substance which has created all the attention, which Liebriech uses, and which, at the request of the British Association for the Advancement of Science, Richardson experimented with and reported upon at Exeter, is strictly not chloral itself, but the hydrate of that body. Chloral (C_2Cl_3OH) is a colourless fluid, with a very high boiling point (210° Fahr.), and a sharp pungent odour. It becomes the hydrate of chloral on being mixed with water, and exists then as a white, solid substance, having a pungent odour, with which is combined the odour of ripe melon. The hydrate dissolves readily in water, and thirty grains of it dissolved in forty of water make up one fluid drachm of a saturated solution. It can be given in solution either by the mouth or by subcutaneous injection.

The idea that the hydrate of chloral is intended to supersede chloroform, bichlorite of methylene, ether, or the other volatile anæsthetics, as an agent for removing pain during the performance of surgical operations, is an error. Whatever may have been the hopes of the distinguished Liebriech himself on this point, when he originally thought of employing the agent, they have not been realised. Nor has the substance been put forward as the rival of the agents named for surgical anæsthesia. It is as the rival of opium that hydrate of chloral claims our consideration. Speaking simply of its effects on the body, and leaving out of view the theory of its action, and its supposed decomposition within the organism, we may state definitely that the hydrate when administered in an efficient dose (a drachm is not an immoderate dose for an adult) produces on men and on the inferior animals a kind of stupor or sleep, which may be made to extend over five, and even seven hours with comparative safety. The stupor is sometimes preceded by nausea, and in birds it is always preceded by vomiting. It is attended with great muscular prostration, and with decrease of animal temperature. During the period of stupor there is an interval of perfect insensibility to pain; but the interval is short, and for the greater part of the period the sensibility is either natural or *exalted*. This fact of the exaltation of sensibility, which was specially dwelt upon by the reporter at Exeter, has been confirmed by the researches of Demarquay, of Paris, whose paper was noticed in the Lancet of last week. It is a fact as curious as it is important; and, indeed, the whole subject is one of singular interest. But, as we have already hinted, the first question to be made out in practice is, whether hydrate of chloral can be used for sustaining sleep in the same class of cases as those in which we now administer opium. To this question we would direct the attention of the profession, forewarning the prescriber at the same time that his experience, in a pecuniary sense, will *at present have to* be bought at the average cost of two shillings and sixpence *per dose of the medicine*.—*Lancet*, *Oct.* 2, 1869, p. 481.

108.—ON THE HYDRATE OF CHLORAL.

By Dr. Benjamin W. Richardson, F. R. S.

The remedy is intended to produce insensibility to pain with prolonged sleep.

At the onset, however, let us understand this point; the insensibility and the sleep this hydrate produces (and, whether it acts well or ill, it has the virtue of producing both states) is not an insensibility and not a sleep intended to represent or to rival in action the action of the volatile anæsthetics we use for the abolition of pain during surgical operations.

True, it would not be inconsistent to apply it for operations; for although it is not, as we use it, readily applicable, it might be administered for the surgeon by the mouth, as, in the old time, mandrake was recommended to be given by Dioscorides and Pliny. But it is not, I repeat, the intent to set up this new substance as a rival to the well known volatile anæsthetics, because it is not so good for the purpose as many other agents with which we are familiar—not so good because not so ready, and perhaps not so safe.

Whatever of useful intention there is in the introduction of hydrate of chloral is included in the virtue it possesses of causing prolonged sleep. We meet every day of our lives with cases of disease in which we wish to give the patient a long and peaceful sleep—a sleep which shall represent faithfully the natural rest—the sleep

> "That knits up the ravelled sleeve of care,
> The birth of each day's life, sore labour's bath."

And we try, by artificial means, to induce this sleep. Do we succeed?

For the accomplishment of this great and merciful end we have had in our hands for ages one grand remedy; we call it often our sheet-anchor. The remedy is opium. How we prize it! We know it so well, we do not readily appreciate what it would be to have it taken from us, nor feel that in its absence, half our art of usefulness in this world would be lost. We learn to apply it in different ways and in different forms of combination; and it is to be admitted, by all candid minds, that we succeed marvellously. Dr. Dover, for instance, when he invented that magic powder which bears his name, did a something in science which, for practical usefulness to the human race, surpasses a thousand more brilliant discoveries. But, after all, with endless manipulation and practice, opium does not answer each of our desires. It commonly causes nausea, sometimes vomiting; it leaves behind it headache; it destroys appetite. Wanted, therefore, a remedy that shall have the advantages of opium, and none of its disadvantages. We look anxiously for this remedy. The intention of hydrate of chloral, be the result good or bad, is to furnish the remedy in question. I do not pretend for a moment to say that it perfectly supplies the want, but this must be considered to be its intention; and I now proceed to relate how far, according to our present knowledge of it, it answers to the call. Perhaps, if it does not answer every particular expectation, it may answer some particulars.

We may pass now to consider the physiological action of hydrate of chloral. Up to the present time it has been administered in solution with water, either by subcutaneous injection or direct by the mouth. The best solution is made by mixing one grain of the hydrate with two of water. I shall show you, however, a new fact in a little time—namely, that the substance can be administered, to some extent, by inhalation.

The hydrate appears to act on all classes of animals. I have tested it on frogs, on fishes, on birds, and on herbivorous and carnivorous mammals. In this respect it resembles all derivatives from the alcohols, while it differs from opium, which, on pigeons and other herbivorous birds, is practically negative. The dose which produces effect varies considerably, according to the size and weight of the animal. Pigeons weighing from 8½ to 11 ounces are thoroughly narcotised by 1½ to 2 grains, and die when the dose administered exceeds 2½ grains—*i.e., if the dose be injected* subcutaneously. Rabbits weighing 8¾ to

88 ounces are fully narcotised by thirty grains. A frog weighing six drachms is well narcotised with half a grain; a mouse weighing four drachms with a third of a grain. An adult human being will take by the mouth, one hundred and twenty grains as an extreme dose.

In all cases, whether in experiment or otherwise, the solution of the hydrate should be tested for reaction. If it be found acid, it should be neutralised with a minute quantity of ammonia; but extreme care must be taken in adding the ammonia, or some of the hydrate will be decomposed into formate of ammonium and chloroform.

Before proceeding further, I pause to place before you the theory of the action of the hydrate of chloral as propounded by Liebreich. We have seen that when the hydrate is treated with an alkali it is resolved into chloroform and a formate. The blood is an alkaline fluid; therefore, says Liebreich, when the hydrate is introduced into the organism, every small particle of it will consume the surrounding quantity of alkali, and the decomposition will be completed only after the required amount of alkali has been furnished by the blood. In the smallest point of time the minimum quantity of chloroform is formed, and passes to the first place of action—viz., the ganglia cells of the cerebrum. The action with the increase of chloroform in the blood extends to the ganglia of the spinal cord; lastly, it extends to the ganglia cells of the heart. The action corresponds with the slowest possible application of chloroform, and he concludes, in reference to the ultimate removal of the chloroform from the body, that it is not resolved by oxidation into carbonic and hydrochloric acids, but passes off as chloroform. This agrees with the researches by Snow and by myself in regard to extrication of chloroform simply. Such is the theory of action of chloral by Liebreich. He gives in addition a splendid array of experimental facts relating to the phenomena produced in animals and men by this agent when it is administered by the mouth or by subcutaneous injection. From all his researches we gather from him:

(*a*) That the hydrate in efficient dose produces deep sleep quickly after administration, and, when carried far enough, complete anæsthesia.

(*b*) That the action is without excitement.

(*c*) That the agent leaves no bad after effects.

(*d*) That the nervous power of the heart is the last that suffers.

(*e*) That the agency at work is chloroform, chemically made, we may say, in the body.

I will now move to a recital of my own experiments and observations, illustrating by experiment as I pass along. We will in this way follow the action of chloral from the lower to the higher classes of animals.

Effect on Frogs.—Frogs come rapidly under the narcotic influence of chloral. To a full-sized frog, half a grain acts as an efficient dose in from six to nine minutes. Three-quarters of a grain will be borne by some frogs, but as a rule this animal sleeps to death under so large a dose. So soon as the agent begins to take effect there is drooping of the head, relaxation of the limbs, closing in of the eyes and profound stupor. The animal is cataleptic in regard to motion, its limbs remaining in the state in which they were left. It will lie in this torpid condition for a period even of twenty hours. You see before you two frogs thus sleeping. The one in which the breathing is imperceptible has had a large dose of the narcotic, and is *possibly* dead. The other, which is softly breathing, has had a smaller dose, and about this time to-morrow, if the temperature of the air be not over 60° Fahrenheit, will begin to wake up. There is no sensibility in animals thus sleeping; there is not even reflex sensibility. They sleep on when every function of life is at rest except one—the circulation. In illustration of this fact, you will see a remarkable phenomenon in the web of a frog's foot which Dr. Sedgwick has placed under the microscope. The animal, before being placed under the microscope, was put to sleep profoundly with a full dose of chloral. It is sleeping now so deeply that it would pass for dead; and yet you will see in the web of its foot that the most perfect circulation is going on—in fact, in the midst of all this death, there is some feeble motion of the heart. Liebreich's *view that the heart is the* last part which dies under chloral is thus confirmed, and the fact tends also to confirm his theory that chloroform formed within the organism is the cause of the sleep; for, as some of you will remember, I took occasion to show last year that, under chloroform purely, the heart is the last organ that dies.

When a frog recovers from the deep narcotism we have seen, it recovers perfectly. No bad symptoms remain behind.

Fishes.—Fishes are readily narcotised by the hydrate of chloral. We may administer it to them by inhalation—that is, by mixing the agent with the water in which they float. They absorb slowly in this way, but at last fall asleep. Here is a large carp lying as deeply asleep as you could wish to see. It breathes regularly and gently, and is altogether oblivious and insensible. This animal has absorbed the narcotic by the gills; but here is another large carp which Dr. Sedgwick has put into deep sleep by subcutaneous injection of five grains of the hydrate. It, too, is oblivious, and will remain so probably for four or five hours. To insure its recovery, the water it floats in must be frequently changed, so that the eliminated products may be quickly carried away; the subcutaneous injection of a fish for the production of narcotism is a novel experiment.

Mice.—Mice are readily narcotised with the hydrate. For a mouse weighing half an ounce, a quarter of a grain is sufficient to secure a long sleep. Mice thus put to sleep lie precisely like dormice in a state of hybernation. They pass into sleep without any excitement; they recover without any baneful symptom.

Birds.—Pigeons weighing from eight to eleven ounces are readily narcotised with from one and a half to two and a half grains of the hydrate. No excitement precedes sleep; but the birds, as after chloroform, usually show signs of nausea as they become drowsy. The character of the sleep and the degree of insensibility vary with the dose. A dose of one grain and a half produces drowsiness in ten or twelve minutes at most; deep sleep in one hour and a half, and an interrupted sleep of three hours. During this period the time of complete anæsthesia may be short—not more than five or six minutes. At other times there are reflex movements, and the animal, when moved, wakes to a semi-consciousness. A dose of two grains produces sleep in ten minutes, with perfect insensibility lasting twenty-six minutes. The sleep continues three hours. A dose of two grains and a half by the mouth produces drowsiness, with complete insensibility, in one hour. The perfect insensibility may last fifty minutes, and the drowsiness continue after this from two to three hours. In one case recovery from this dose was accompanied by convulsive movements, and danger seemed imminent for a time, but in the end the recovery was perfect. A dose of two grains and a half will produce complete anæsthesia usually in twenty minutes, and the anæsthetic condition will last from one to two hours, and in thirty or thirty-five minutes there will be restoration of consciousness, still with drowsiness. Recovery is accompanied with tremors, and is completed in six hours. In one instance this dose produced an insensibility which lasted three hours and a half; and, for a time, the evidences of life were so reduced that the bird was supposed to be dead. Nevertheless, recovery was perfect. A dose of five grains produced insensibility of the profoundest kind in sixteen minutes, with death preceded by convulsive movements in fifty to sixty minutes. A dose of seven grains and a half produced insensibility in five minutes, and death in forty-seven minutes, preceded by convulsive movements. In all the cases on which these facts are based the odour of chloroform was distinctly perceptible in the breath of the animals shortly after the administration. The odour lasted a very few minutes. In every instance there was one prominent and persistent effect following upon the administration, which effect deserves to be named separately. There was decrease of animal temperature extending through the whole period of the action of the hydrate. One grain and a half brought down the temperature two degrees Fahrenheit; two grains and a half, five degrees; and five grains, eight degrees.

Rabbits.—The hydrate produces in rabbits the most perfect and prolonged sleep, without any *preliminary* excitement, sign of oppression, or disturbance.

The administration may be made by the mouth or by subcutaneous injection, the dose by either method being the same. The quantity of the dose varies with the weight of the animal. A rabbit weighing from seventy to eighty ounces will be narcotised completely with a dose of thirty grains, but it would bear forty grains without being subjected to serious danger; a rabbit weighing twenty to thirty ounces will go to sleep under a dose of nine to twelve grains, but will bear fifteen. Drowsiness usually commences in from fifteen to twenty minutes, without any sign of preliminary excitement; then follow want of muscular power, beginning in the hinder limbs as under chloroform, dilatation of the pupil, dilatation of the vessels of the ear, universal muscular relaxation, and soon deep sleep.

Of the character of the sleep you can judge for yourselves, for there are animals before you in all the stages of narcotism. One is just passing into sleep; one is recovering; one is in a very profound stupor, insensible to every external impression, and is so mobile that in whatever position you place the limbs or bend the body the position is retained; a fourth is in deep sleep, but appears impressionable, for when you touch it ever so lightly there is an involuntary start. I noticed this condition—which, we may perhaps, call hyperæsthesia—in the very first experiments I made with hydrate of chloral, and Demarquay, of Paris, has since observed and dwelt upon the same fact with much force: as I become better acquainted with the action of the hydrate, this symptom appears to me of less moment. I doubt whether the movement is anything more than reflex—that is to say, I doubt altogether whether in any sense it is due to consciousness of impression—pain.

The sleep will last from four to five hours, and the animal will recover as from natural sleep, except that drowsiness will be more prolonged. The desire for food after the recovery is urgent, and no untoward event marks or mars the process of recovery.

In other animals the same series of phenomena are observable after a dose of the hydrate. Here is a young cat to which an excessive dose has been administered, so that she shall sleep to absolute death. There is evidence of life in this animal, for there is gentle breathing and action of the heart, but in every other respect there is perfect death; gradually the breathing will cease altogether, and then the heart. It is impossible to describe the gentleness of this mode of death; indeed there is a period when it is hard to say whether there is life or death, so gradual is the transition.

Man.—In man the same series of symptoms extending to the extreme changes would without doubt be induced by an efficient dose of the hydrate of chloral; for in so far as the symptoms have been traced, they tally with what we have seen in the lower animals. Long sleep lasting over several hours has been caused in men and women by doses of the remedy vary from thirty to sixty grains, and men in the frenzy of acute mania have been brought into quiet and sleep by doses of one to two drachms. The sleep is gentle, seems to be attended with no symptom of distress, and leaves no serious evil behind. Nausea is, however, occasionally felt after recovery.

In the case of every animal, from the lowest to the highest, the sleep is induced not merely without pain, but with expression of pleasure. Rabbits arrange themselves to sleep in the most natural manner, and cats purr as they pass into rest in obvious comfort of repose.

I have spoken once or twice incidentally on the weight of the animal as influencing action of dose. This deserves particular notice. In the lower animals there is, we may almost say, a common rule in respect to weight of animal and dose of hydrate; thus an animal weighing, say, three ounces, requires one grain of the narcotic to be brought fairly and fully under its influence. If the proportion of dose be beneath this, the symptoms will be imperfectly developed; if it be much exceeded, the symptoms will end in fatal sleep.

In the human subject allowance would have to be made in relation not only to size and weight, but to obesity or leanness, to natural habit, and actual state of body in respect to sensibility. But, in spite of all these modifying influences, the rule respecting dose given above would, I believe, be approximately true, and the knowledge of it accounts for the fact of the large doses which have recently been administered in France, apparently with impunity, to the human subject.

Summary.—The effects of hydrate of chloral may be summed up as follows:—

(*a*) Deep and prolonged narcotism can be safely produced by the hydrate of chloral.

(*b*) During a portion of the period of narcotism there may be complete anæsthesia with absence of reflex actions, and a condition in which every kind of operation fails to call forth consciousness.

(*c*) During the narcotism there are intervals of apparent exalted sensibility.

(*d*) In the transition from drowsiness to stupor there is no stage of muscular excitement, but in birds there is vomiting, as is common in the same animal in the second stage of narcotism under chloroform.

(*e*) During the narcotism produced by the substance there is invariably reduction of temperature.

(*f*) The hydrate produces muscular relaxation, which relaxation extends to the muscles of volition and alike to the iris and the muscular arterial system. From the condition of the muscles after death we may infer that this paralysis is in part due to change within the muscular structure itself.

(*g*) The action of the substance on the nervous system is primarily on the sympathetic ganglia, afterwards on the cerebrum, and finally on the heart.

(*h*) Recovery, when it takes place, is followed by no bad results.

(*i*) In fatal cases the functions destroyed are:—1. The cerebral. 2. The voluntary muscular. 3. The respiratory. 4. The heart.

(*j*) The substance in small proportions arrests in some degree the coagulation of the blood, and in large quantities stops the process of coagulation altogether. In large quantities it also destroys the blood corpuscles and produces general destruction of blood, but the dose required to produce extreme narcotism need not be so large as to lead to serious derangement of blood.

(*k*) The phenomena observed correspond with those observed under chloroform, and the balance of evidence is that they are the result of the action of chloroform.

Therapeutical Value of Hydrate of Chloral.—The last point we have to consider relates to the therapeutical application of the hydrate. I may premise that the dose to the human subject varies, according to the age of the subject or according to the effects desired by the administrator, from seven grains to two drachms. For young children, Liebreich recommends seven grains as the dose. For adults, if short intervals of sleep are required, from twenty-five to thirty grains may be administered, and may be repeated every two or three hours, by which a safe and continuous action may be maintained. In cases where more determinate effects are demanded at once, from one to two drachms may be given at once.

The hydrate may be prescribed in solution with water. It must be well diluted—say in proportion of ten grains to the ounce of water, for it is pungent if not well diluted. The addition of a little tincture of orange, as suggested by Liebreich, is an advantage when the substance has to be swallowed. Altogether I prefer administration by the mouth rather than by subcutaneous injection. The agent acts quite as well and as quickly when thus administered, and in the same dose. I also myself prefer to prescribe moderate and frequently repeated doses rather than one large dose.

Liebreich, in his communications, recommends the hydrate of chloral for neuralgia and rheumatism, for convulsive cough and tetanus, for acute mania and delirium tremens, for gallstones, for removing the pain of small surgical operations, and for local application for the relief of local pain. In cases where there is gastric irritation, as from ulceration, he thinks it should not be administered by the mouth, but should be injected subcutaneously. He seems to have obtained the best results from its use in cases of acute mania and delirium tremens.

We may ourselves draw the clearest indications of therapeutical value from the experimental facts connected with the action of the hydrate which have been presented to us in *experiment*. Let us sum these facts. The hydrate *produces sleep, removes sensibility, brings down the animal temperature, and causes extreme muscular relaxation.* Taking these facts as our guide, we may reasonably put it to the test for the relief of various diseased states and conditions.

1. Because the hydrate *produces sleep*, it may be employed in cases of sleeplessness and excitement where opium or other narcotics are objectionable. It may thus be used in acute mania, in delirium tremens, and possibly during hysterical excitement.

2. Because the hydrate *relieves pain*, it may be administered as a substitute for opium, or independently, in cases of suffering from acute pain, as in neuralgia, rheumatism, cancer. It may also be used for the same intention in surgical cases, attended with much suffering, and may be carried in such cases, when required, to the extent of rendering a painful part sufficiently insensible to admit of its being altered in position or readjusted. We often have cases of painful disease of joints—strumous disease of the knee-joint, for example—where an agent like the hydrate of chloral may become of the greatest service for the purpose just described. The same application may likewise extend to the treatment of compound fractures where it is important that the injured parts should be moved without the excitement attendant upon suffering.

3. Because the hydrate *reduces the animal temperature*, it may be tested, with every probability of advantage, in cases where there is rapid increment of heat—fever—with restlessness and excitement. I select cases of surgical fever as cases singularly happy in illustration of this position. In examples where accident or surgical operation is succeeded by heat of body with constant pain, sleeplessness, and tendency to delirium, I can imagine no treatment better than the administration of moderate and frequently repeated doses (say twenty to thirty grains every two hours) of the hydrate. Under its influence sleep would be induced, pain and excitement relieved, temperature brought down, and undue waste suspended. What is more, the tendency of the agent is to maintain the fluidity of the blood, and thus to prevent the most dangerous of all occurrences in acute disease, separation and deposition of fibrine in the circulatory system.

4. Because the hydrate *produces extreme muscular relaxation*, it may be reasonably employed in various cases, medical and surgical, where it is necessary to overcome muscular resistance or spasm. Thus it may be employed in tetanus, in cases where there is passage of gallstone, and, I should think, with special advantage, in strangulated hernia. In this latter case it would have a double meaning. It might be employed not only for rendering reduction by the taxis easy, to the avoidance of an operation, but if operation were afterwards unavoidable, it would tend to remove the pain of the operation and to be of service to the operator by sustaining relaxation.

It is unnecessary for me to trouble you with further suggestive details. The physiological action of the hydrate of chloral understood, its applications will occur equally to all; I shall therefore be content simply to record that the external use of chloral for the relief of pain, as recommended by Liebreich, does not, according to my experience, correspond with its usefulness as an internal remedy. I find that when applied to the skin it creates some irritation, and in a typical case of superficial and local neuralgia, where I have employed it for a week with great care, it has had no effect in relieving the pain of the sufferer.

I had intended in this lecture to have brought before your notice some experimental facts bearing on the value of some chemical substances allied, in physiological action, to the hydrate of chloral, but the hour has long expired, and I must reserve what has to be said on this matter for a future occasion. Meanwhile, it is but just to accord our warmest tribute to the genius and industry of the distinguished Professor in Berlin, Liebreich, who has placed in our hands so admirable and scientific a remedy as that we have discussed to-day.—*Medical Times and Gazette, Oct.* 30 *and Nov.* 6, 1869, *pp.* 509, 537.

109.—ON HYDRATE OF CHLORAL, AND ITS USE IN PRACTICE.

By T. Spencer Wells, Esq., Surgeon to the Queen's Household and to the Samaritan Hospital.

Through the kindness of Professor Bardeleben, of Berlin, I received last July about two ounces of hydrate of chloral, a substance which had been brought before the Medical Society of Berlin as a new hypnotic and anæsthetic on the 2nd of June, by Dr. Otto Liebreich, Chemical Assistant in the Pathological Institute of that city.

Chloral and chloro-acetic acid were discovered thirty years ago by Liebig. When anhydrous alcohol is acted on by perfectly dry chlorine gas, a remarkable result takes place. Five-sixths of the hydrogen of the alcohol are removed, and are replaced by three of chlorine, and after separation of a large quantity of muriatic acid, a dense oily liquid, chloral, $C_4HCl_3O_2$, is obtained.

[When chloral is given internally it is absorbed and enters the blood, the alkali of which sets free chloroform in the tissues. The chloral is in fact decomposed into chloroform and formic acid; the latter, however, is in very small quantities, and can have very slight effect.]

A minute dose of chloral was sufficient to produce the symptoms of narcosis from chloroform in a young rabbit; the animal fell gradually asleep, but without the stage of excitement. Regular pulse and respiration were the only evidences of life.

In a middle-sized rabbit complete hypnosis was produced during nine hours by an injection of seven grains of chloral, which correspond to about three grains of chloroform. Experiments on frogs are still more conclusive. The first effect of chloral on frogs is a cataleptic stage, during which the animal may be placed and kept in any position, but reflex motion may be produced by irritation. In the next stage, however, no reflex motion can be effected. If the dose is not too large and fatal, the animal returns to its former condition. If, however, the dose is too large and the animal dies, the ventricles and the auricles will be found distended by blood. Death takes place from paralysis of the heart. The same effect has been observed in other animals. Liebreich concludes from these and other experiments that chloral at first paralyses the ganglionic cells of the brain and then those of the spine, and, if fatal, finally the ganglionic cells of the heart. The effects of chloral on animals are identical with those of chloroform. The absence of the stage of excitement may be explained by the more gradual formation of chloroform within the animal body—actually in the tissues of the body, even in the brain itself. Liebreich tried also the effect of chloral on man, in the Charité, at Berlin. The first experiment was made on an insane person, by subcutaneous injection, at first of very small doses. No local irritation took place. One dose of about twenty grains of hydrate of chloral produced five hours' sleep.

In another case of a patient suffering from stupor and melancholia, fifty grains of chloral in a wineglassful of water produced sleep during sixteen hours. In a very painful inflammation of the wrist-joint in a woman, forty grains of chloral produced sufficient anæsthesia to admit of the painless application of an apparatus. In every case the sleep was normal, and followed in about five minutes after the administration of chloral.

Having read the paper of Liebreich from which the above statements have been kindly abstracted for me by my colleague, Dr. Junker, I dissolved fifteen grains of the *chloral* (using this word for convenience instead of the more correct "hydrate of chloral") in an ounce of water, and drank the solution. The draught was rather pungent, and was followed by a sensation of heat in the throat and stomach, but not to an unpleasant extent. I continued my ordinary occupation during the day, and found very little effect of any kind from the dose. I felt, therefore, quite safe in giving 30 grains to a young married lady whom I saw in consultation with my friend, Dr. Frank, of Cannes, suffering for the fourth time from a severe and intractable attack of sciatica, and Mr. Squire undertook to make up prescriptions and procure a further supply of the chloral. From one to two grains of morphia by subcutaneous injection had been required to give relief to our patient, $\frac{1}{6}$ of a grain of atropia being added to prevent the sickness which, without this corrective, was invariably severe and protracted. Even this large dose of morphia, always successful in calming pain for the greater part of the night, procured, as a rule, but little sleep, and that was disturbed by delirium and distressing startings of the affected limb. Atropia alone gradually increased to $\frac{1}{24}$ gr. (by subcutaneous injection) did no appreciable good, not soothing the neuralgia, although the toxic effects of the drug were disagreeably evident. The morphia and atropia injection was suspended during a lull in the severity of the neuralgic paroxysms, and during a period of three days extreme and distressing restlessness with absolute sleeplessness prevailed. I had twice introduced six acupuncture needles with only temporary relief. The neuralgia, favoured by the exhaustion consequent on want of sleep, threatened a relapse with all its former vehemence, and a return to opiates would have been inevitable if the timely arrival of the chloral had not offered a new resource. Thirty grains of chloral given at this juncture procured for the patient the best night she had enjoyed since the commencement of her illness—a night of perfectly tranquil sleep, from which she awoke fresh and well as from natural slumber. The dose was repeated the following evening with the same effect, but the patient had rather a troublesome headache in the morning. Subsequently the dose had to be increased to 45 grains to insure a perfect result, which was always obtained except on one occasion, when, on account of a rather severe relapse of the neuralgia, $\frac{1}{3}$ gr. of morphia and $\frac{1}{60}$ gr. of atropia had been injected two hours before the chloral was administered. Morning headache not yielding to coffee, was constantly complained of, and in that respect the result differed from those reported in the German journals, where the absence of distressing after-effects is described with especial emphasis. The patient complained a little of the burning taste of the drug, but her appetite, never good, was even better than usual, and the digestive functions were not at all interfered with. She had but little sleep when the remedy was suspended, but none of the distressing restlessness following the interruption of the morphia injection. The sciatica having since all but yielded to the application of the actual cautery to the back near the roots of the left sciatic nerve, the patient has been able to give up the chloral after a course of three weeks, abandoning its use with much reluctance.

The next trial was made in the case of a lady, another patient of Dr. Frank's, the subject of occipital neuralgia. During a long period of suffering all ordinary sedatives had proved themselves conspicuously unavailing, in whatever way or combination administered. Three applications of the continuous current had been productive of very marked relief, but after a fourth *séance* the neuralgia became intensified, and symptoms of diffuse cerebral irritation were evident. Thirty grains of chloral produced no hypnotic effect under these circumstances, and the patient suffered so much from burning pain in the throat and stomach that she declined further experiment.

[In the next case related in this paper, the whole of the uterus and both ovaries were removed by abdominal section, on account of a large fibrous tumour.]

The patient went on wonderfully well, but required opiates at night, and these led to sickness and headache, so that on July 28 I gave a draught containing thirty grains of chloral at bedtime instead of the opiate, and the report next day was that she had passed the best night since the operation, had neither headache nor sickness, and a good appetite. This lady was taken twenty-four miles in an invalid carriage eighteen days after the operation, and has steadily improved since, not having taken more than two or three doses of chloral after the first.

I prescribed chloral for another patient on July 28—a gentleman whom I have attended occasionally for nearly twenty years past with a very slowly progressive form of locomotor ataxy accompanied by frequent severe neuralgic attacks, for which he has long been in the habit of taking morphia. We arranged that he should make a series of comparative trials with chloral and morphia, endeavouring to ascertain if one has any and what advantage over the other. *As this patient* has cultivated his powers of observation to a very high degree, and is assisted by my friend Dr Davidson, who sees him daily, I hope to obtain some very satisfactory reports, but have not as yet received any.

In another case where comparative trials have been made, the results are only partially satisfactory. The patient is a lady whom I have been attending with Sir William Jenner, on account of frequent uterine hemorrhage dependent on epithelioma of the cervix uteri, and who suffers from almost incessant lumbar pains, which are relieved by opium, and still more relieved by a combination of opium and belladonna. But after either of these drugs, headache and loss of appetite are constantly observed; so on August 1 I began to try the chloral. It has been taken pretty constantly since, first in doses of thirty grains, and then of fifteen grains; and for some time one of these doses has been taken on alternate nights, one grain of opium and a quarter of a grain of extract of belladonna being taken on the intermediate nights. We have arrived at a sort of rule that thirty grains of chloral give about as much relief to pain as one grain of opium; that its effects are more immediate; that it is not so certainly followed by sleep, or by sleep of such long duration; but that on the succeeding day no kind of ill effect is observed, while after the opium there is invariably loss of appetite and more or less headache. On two occasions, when the dose of thirty grains was taken after large floodings, considerable excitement, restlessness, and incoherent talking, followed for about two hours; but this has not been observed since the bleeding has become more moderate.

This constitutes the whole of my personal experience of chloral; but I think I have seen enough to justify the hope that it will prove to be of valuable assistance in cases where we wish to obtain rapid relief to pain, and at the same time to lower the temperature of the body, while we are anxious to avoid the headache, sickness, or loss of appetite, and the rise of temperature which often counterbalance the good effects of opium.

Since writing the above, I have seen in the Berlin *Klinische Wochenschrift* of August 30 the report of a case where Langenbeck successfully used the chloral, quieting by it delirium following comminuted fracture of the humerus in a woman of intemperate habits. During the night following the injury, the patient became furiously maniacal, and notwithstanding many attempts to fix the limb, the upper fragment of the bone was being constantly forced against the soft parts, so that the whole arm became extensively ecchymosed, probably from rupture of a large vein. There was great reason to fear mortification, if the restlessness could not be subdued. Seven grains of opium, one grain of morphia, and brandy had been given without any result, when at 1.30 p.m. of the day after the injury Langenbeck gave sixty grains of chloral, and followed up the dose by thirty grains in three successive subcutaneous injections. Ten minutes after the first dose, the patient became quieter, although delirium continued. A quarter of an hour afterwards she was fast asleep, and continued to sleep quietly until the next morning, when she awoke free from delirium. Symptoms indicating the probability of relapse recurred in the evening, but thirty grains of chloral taken internally were followed by an excellent night. The patient made a good recovery, mortification of the integument being limited to the portion exposed to the jerking action of the upper fragment of the bone.

Langenbeck dwells particularly on the peaceful normal sleep which, under such aggravated circumstances, was so quickly induced by the chloral. He has since used it with good effect in subduing tetanic spasms, but the patient was still under treatment at the date of the last report which I have seen.

I have not used chloral by subcutaneous injection, fearing some local irritation; but recent experiments seem to prove that even chloroform is not irritating when injected under the skin, and there would be much less probability of chloral acting as a local irritant.

I have usually prescribed thirty grains of chloral with a drachm of syrup and ten drachms of water. With only an ounce of water the draught is rather too pungent. In Germany this dose is given with equal parts of syrup and water—*half an ounce of each.*

Chloral is very dear. The Germans say "a sleep costs a dollar." I paid

£8 15s. for two ounces; and in July it was not easy to get it even at this price. But Mr. Squire tells me that he can now easily maintain an adequate supply. —*Medical Times and Gazette, Sept.* 18 *and Oct.* 2, 1869, *pp.* 346, 408.

110.—NOTE UPON APOMORPHIA AND CHLOROCODIDE.

By Dr. SAMUEL J. GEE, Assistant Physician to St. Bartholomew's Hospital.

Last May I read before the Clinical Society a short account of the therapeutical properties of apomorphia, a new base which had been discovered, the previous month, by Dr. Matthiessen. In No. 112 of the "Proceedings of the Royal Society" there appeared two papers by Dr. Matthiessen and Mr. Wright upon the chemistry of apomorphia. In this place I wish to add a few therapeutical facts, gained by subsequent experience.

Every trial made has confirmed the statement that apomorphia is a most powerful emetic and contrastimulant. To the best of my knowledge apomorphia has never been administered in an emetic dose (namely $\frac{1}{10}$ grain subcutaneously or $\frac{1}{4}$ grain by the mouth) without producing speedy vomiting. On one occasion the vomiting occurred eighty seconds after the injection. But there is a drawback to the value of apomorphia used as an emetic, and that is the contrastimulant effect produced at the same time. Not that the latter effect always occurs, far from it; but sometimes it does occur to an extent such as to cause anxiety on the part of the person who has made the injection; the patient seems as if his muscular power were gone; the vascular system, however, does not appear to be depressed to an equal extent. The strength of the patient has nothing to do with the occurrence or not of the sedative effect; the strongest men sometimes suffer greatly, and the weakest sometimes escape. It is, perhaps, not surprising that an emetic of the activity of apomorphia should be depressing, and the more so since it is clearly an emetic which does not act by causing direct gastric irritation (sub-inflammation), but which acts as blows upon the head, foul sights or smells, or mere imaginations act. In some cases the production of a state of depression is even to be desired; emetics have often been used to that end.

As a contrastimulant apomorphia does not possess any special advantage, except that the alimentary canal is not inflamed, as is the event when antimony and veratria are given. But my experiments in this direction are very few, and this chiefly on account of the costliness of the drug. Owing to difficulties in the preparation of apmorphia, the produce does not weigh more than a tenth part of the morphia employed in the manufacture. The present price of morphia being five-and-twenty shillings an ounce, the value of apomorphia comes to be something beside which aurum potabile fades into insignificance. This does not matter when single tenths of a grain are used to produce vomiting: the expense arises when larger doses are frequently given by the mouth. Let us hope that the chemists will soon surmount these difficulties.

Apomorphia can be procured from codeia. An intermediate compound, chlorocodide, is formed.

Experiments show that the properties of chlorocodide and of codeia are identical, salivation and dilatation of the pupils being the symptoms most easily produced; larger doses causing extreme restlessness, and very large doses proving fatal after a state of mixed paralysis and spasm both tonic and clonic; consciousness being unaffected. The only property of chlorocodide that holds out any promise of being useful in medicine is the extreme bitterness of the base, almost equal to the bitterness of strychnia, while the dose of chlorocodide which is required to produce tetanus in the human being must be enormous (if we may argue from the cat) compared with the dose of strychnia required. A quarter of a grain of chlorocodide taken by the mouth causes an uncommon sense of tonicity in the abdomen. Quina, which is so often given as a stomachic, is a much less intense bitter than chlorocodide, *and tends to* produce fulness and aching of the head, which chlorocodide does not.—*St. Bartholomew's Hospital Reports*, Vol. V., 1869, p. 215.

111.—THE COMBINATION OF CHLOROFORM WITH OPIATES FOR THE RELIEF OF PAIN.

By Dr. William Marshall, Mortlake, Surrey.

Two or three years ago, in the middle of the night, I was seized with a severe attack of colic. Having nothing at hand likely to give relief but chloroform and compound tincture of camphor (paregoric), I made a mixture of these and took it. Shortly before, in a back number of "Braithwaite's Retrospect," I had read several cases in which very large doses of chloroform had been given internally; I had no hesitation, therefore, in taking twenty drops, and a teaspoonful of paregoric, in water. I am very subject to colic, and have taken everything that I have seen or heard recommended for it, and can, therefore, speak somewhat authoritatively on the subject. Nothing that I had ever tried could be compared in effect with this dose. There was immediately a sense of grateful warmth in the stomach, which seemed to radiate thence through the whole abdomen, soothing the painful parts. I then fell asleep, certainly within two or three minutes after taking the dose. In about two hours I awoke, and not being quite free from pain, took a second dose, fell asleep directly after, and slept soundly until morning, when I awoke free from pain, and without any headache, which I probably should have had, had I taken the paregoric alone. Since then I have frequently experienced the same beneficial effects, not only in myself, but also in many patients. I have prescribed it in all kinds of severe pain, when it was necessary to give immediate relief; and with such success that I would urge the readers of this Journal to give it a trial on the first opportunity.

The medicine sold under the name of "chlorodyne" is a compound of chloroform and morphia, &c., but is not nearly so effectual. In twenty minims of it there are, I believe, only two minims and a half of chloroform, whereas I find ten the smallest quantity that will produce an appreciable effect. I have given as much as one drachm in a single dose, but ten to twenty minims—not drops—is in most cases an effectual and safe dose. With the chloroform, one or two drachms of compound tincture of camphor should be prescribed if the pain be moderate in severity, or ten, twenty, or forty minims of "Battley," or sol. mur. morphiæ, if more severe. This combination generally relieves pain, and induces sleep *within a few minutes*, and its effects are more lasting than those of an opiate alone, and without its disagreeable after effects. It ought to be given in some thickish solution, such as mucilage, otherwise the chloroform will fall to the bottom.

The following cases will illustrate its action:—

Three days after her confinement, Mrs. P. was seized with violent pain in the abdomen, accompanied by sickness. The pain was felt principally in the region of the gall bladder, but extended over the whole abdomen. It yielded, after some hours, to large doses of opium, &c. Similar attacks recurred frequently for two or three months, and were always treated with opiates, purgatives, and application of mustard plasters, &c., which gave relief only after several hours. It was at this time that I became acquainted with the virtues of the combination of chloroform and opium, and I tried it in the next attack. About 5 o'clock one morning she was awakened by the return of the pain. She applied mustard, took brandy and water, but the pain gradually became worse, and at 11 o'clock, when I first saw her, was very severe. It came on in the epigastrium, extended through to the back, up the spine to the occiput, down the arms to the fingers, the muscles of the arm were seized with cramp, the fingers being flexed into the palm, and the forearm upon the arm; the face pale, anxious, and covered with perspiration. Similar paroxysms recurred every few minutes. I immediately administered a dose containing 30 minims of sulphuric ether, 20 of chloroform, and 2 drachms of compound tincture of camphor, in an ounce of mucilage. There was *no return of pain* after taking the draught; she fell asleep and slept soundly for some hours, awakening free *from pain, but very sick*.

The effect of the remedy was most marked and satisfactory. In previous attacks relief was procured only after repeated large doses of opium, and many hours of suffering, but in this attack, which was much more severe than any of the others, it was obtained after a single dose of the chloroform mixture. Relief came so instantaneously as to give rise to the suspicion that the gall stone (if it was a gall stone) had escaped from the duct just as the medicine was taken, and that the attack terminated naturally. No gall stones, however, were ever seen in the motions, nor was she at any time jaundiced, so that the diagnosis was not absolutely certain. I had no opportunity of trying the remedy in another attack, as she went to the coast after recovering; she there had similar, but milder attacks, for some months, after which they disappeared.

Miss N., aged 21, after undergoing considerable fatigue and anxiety, while nursing a sick relative, began to suffer from frontal neuralgia. The attacks were very frequent, and came on after any excitement or extra exertion; and daily increased in severity. One evening she was seized with an attack much more severe than any of the previous ones. The pain was in the eye, and in the track of the supraorbital nerve up the forehead, which was very tender to the touch, and was characterised as darting, screwing, &c. The suffering certainly seemed to be very great. Before I saw her she had used various local applications, and among them aconite, but they failed to give any relief. Deeming it proper to give immediate relief, if possible, I administered 20 minims of chloroform and 30 minims of sol. mur. morphiæ, suspended in an ounce of mucilage. A few minutes after taking it she fell asleep, slept soundly for twelve hours, awakening then quite free from pain, and without any of that distress which probably would have been felt after a similar dose of morphia alone. Under tonic treatment the attacks rapidly diminished in frequency and severity, and finally disappeared.

During the prevalence of cholera in London in 1867, Mrs. B. was seized during the night with vomiting, purging, cramps in the bowels and legs, &c. When seen by me some hours after the commencement of the attacks, the sickness had stopped, the purging had diminished, but the cramps were more severe. The eyes were shrunken; the skin, however, was warm. I ordered hot bottles to the feet, a mustard poultice to be applied over the bowels, and gave her 20 minims of chloroform, and 15 minims sol. mur. morphiæ. Before the hot bottles and the mustard poultice were ready, she fell asleep, slept five or six hours, awoke free from pain, and before evening was quite well.

Late one evening I was called to see Mrs. A., the wife of an innkeeper. She had been quite well during the early part of the day, but in the afternoon severe pains in the abdomen had come on, and shortly afterwards she became delirious. I found her sitting up in bed, with one hand covering her eyes, and the other extended, screaming to the servant, "Take away those snakes; there they are, crawling up the bed," &c., &c. Every now and then she stopped in the midst of her delirium to complain of violent pain in the abdomen. The pulse was rapid and feeble, the skin moist and cool, the tongue slightly coated. I ordered her 40 minims of liq. opii sed., and 20 of chloroform, to be taken directly. Next day she was nearly quite well. The draught, she said, relieved her pain directly, so that she was able to fall asleep, and she is now quite well, only feeling a little heavy and exhausted.

Any one unacquainted with the previous history of this case would have imagined that he had to do with a genuine case of delirium tremens, and would have expected that she would have been sleepless and delirious for three or four days at least. But I had often attended Mrs. A. in similar attacks, and knew that if I could relieve the pain, the delirium would disappear. To use the words of her husband on seeing me, "It is only one of her old attacks, if you will give her something to put away the pain she will fall asleep and waken all right." She is in the habit of sipping all day long small quantities of raw gin; she is never intoxicated; she eats very little, the sight of food immediately causing a loathing of it; and "if it were not for the small quantities of gin she takes, she does not know how she could exist;" she retches iolently every morning on getting up; she never enjoys good health, always eeling "low." When any sudden illness comes, such as a sharp attack and pain in the abdomen, she becomes delirious, and this spurious delirium tremens lasts only as long as the pain.

I have selected these cases out of a great many others, to illustrate the successful action of this combination, but I think it fair to add that it is not always so successful. If given to a person in pain who is very sick, it is immediately rejected, and of course gives no relief. It should not be given where there is any inflammation, or even congestion of the stomach. In severe "bilious attacks" it only aggravates the existing congestion of the stomach, &c., and makes matters worse. But, even in other cases where there is every reason to anticipate great relief from its administration, it sometimes fails without my being able to say exactly why.—*Glasgow Medical Journal, May*, 1869, *p*. 351.

112.—SUBSTITUTE FOR CHLORODYNE.

Mr. Edward M'Inall, a pharmaceutist of Philadelphia, recommends the following as a substitute for the chlorodyne of J. Collis Brown.

Sulphate of morphia, gr. lxiv.
Alcohol (ninety-five per cent.), f. oz. ij.
Purified chloroform, f. oz. vj.
Sulphuric acid, q. s.
Extract of cannabis indica (Allen's), dr. ss.
Oleo-resin of capsicum, gtts.xij.
Hydrocyanic acid (Scheele's), gtts. xcvj.

Shake together the sulphate of morphia, alcohol, and chloroform, then add the sulphuric acid, shake well until it becomes clear, then add the oleo-resin of capsicum, extract of cannabis, and hydrocyanic acid.

This forms a clear dark green liquid, possessing the acrid taste of capsicum, and the odour of chloroform. A drachm contains about a grain of the sulphate of morphia, and the dose is given at from fifteen to thirty drops (minims).—*New York Journal of Medicine, Sept.*, 1868, *p*. 581.

113.—ON THE USE OF ANTISEPTIC CERE-CLOTH FOR COVERING WOUNDS.

By Edward Lund, Esq., Lecturer on Anatomy, and one of the Surgeons to the Manchester Royal Infirmary.

[The following paper on what its author has called "Antiseptic cere-cloth," was read before the Surgical Section of the British Medical Association, at the late meeting at Leeds.]

It is, as the name implies, cloth of thin calico saturated with waxy matter in the form of solid paraffin, to which are added a little oil and wax, with carbolic acid in certain proportions. It possesses this double property, that, when placed over a wound, ulcer, or the opening of an abscess, it not only serves to exclude the air as an impervious dressing to the part, but it constantly emits from its surface the vapour of carbolic acid, as it is disengaged by the heat of the body, and so forms an antiseptic atmosphere around the wound.

It will be found an economical and ready substitute for the antiseptic lac plaster of Professor Lister, by which he has obtained wonderful results in the management of severe lacerated wounds, abscesses, and the like; and, in the particular method of applying the cere-cloth, I have endeavoured as far as possible to carry out those minute and careful directions which Professor Lister has given, as the only means by which to secure for the "antiseptic method" a fair chance of success. I will not occupy time by entering upon the disputed question, how it is that the antiseptic method really acts—whether *chemically*, upon the tissues and fluids of the part; or *physiologically*, if I may so say, by arresting the development of those "septic germs" and "*living organisms*" which, by their presence, under certain conditions, seem to determine the existence of suppurative inflammation on the surface of wounds, and thus interfere, more or less, with the healing processes; for, quite independently of this, it is very desirable, especially in hospital practice, where surgical cases are crowded together, to prevent the putrescence of the secretions from wounds, and the fœtid tainted atmosphere which they engender; so that, merely on the score of cleanliness and neatness, it must be admitted that the antiseptic method has much to recommend it.

In the preparation of the cere-cloth, solid paraffin is used as the basis of the composition with which the cloth is saturated. It has these advantages: that paraffin in itself is not at all irritating to the skin; and, when made into cere-cloth, it adapts itself easily to the surface to which it is applied, moulding itself to any peculiarities of form by the warmth and gentle pressure of the hand, at the same time that it is in no way adhesive, as ordinary ointments or cerates would be; and, therefore, when it is required to be removed, it can be raised or slid off from the surface with the least possible disturbance, and a fresh piece placed in its stead. This mixture of solid paraffin, oil, wax, and carbolic acid, in the proportions which I am about to mention, does not liquefy much below 190° Fahr.; so that it retains its solid form at the ordinary temperature of the body, the vapour only of the carbolic acid being slowly dissipated. It is likewise an inexpensive material—a matter of no small importance in public practice. I am not prepared to state its exact cost; but I am sure, if made in large quantities, it will be found to be a very cheap form of surgical dressing. It can be kept in the solid state, protected from the air, for a great length of time; it can then be warmed and liquefied as required. The calico saturated with it, by simply drawing a portion through it while in a fluid state, congeals immediately, and is ready for use; or it may be made, in pieces of any length or width, by rolling the calico over cylinders containing cold water as fast as it has taken up the cerate, as I have shown by a machine in the museum collection of new instruments at our present meeting.

To illustrate how effectually the vapour of carbolic acid, thrown off from this cere-cloth at ordinary temperatures, will prevent putrefaction, I placed some pieces of fresh meat in several wire cages of a cubical form, covering each with the cere-cloth, and fixing it loosely round by an India-rubber band. This was done on the 12th of June last, and again on the 23rd of the same month, and, on opening one of the packets to-day, it will be seen that the piece of meat has remained unchanged, as far as putrefaction is concerned; although, from the time it has been kept in the warm room, it is quite dry and hard. To prove that this was due to the carbolic acid vapour, and not to mere exclusion of the air, on June 12th I also placed a piece of fresh meat in a cage, and covered it over in the same way with calico steeped in exactly the same composition as far as the paraffin, oil, and wax were concerned, but *without* carbolic acid; and in less than nine days the meat was quite putrid and moist from decomposition, and I was compelled to throw it away. This has suggested to me that possibly this cere-cloth might be found very useful for the purpose of wrapping up pathological specimens to preserve their colour and freshness for future microscopical examination; for, if it be the vapour of the acid which produces the result, this alone could not occasion any serious change in the structure or chemical composition of the tissues.

In using this cere-cloth for dressing wounds, although it is important to bear in mind that the exact size and quantity to be employed must vary with the extent and depth of the wound to be covered, and the time which is to elapse before its reapplication, yet it is always prudent not to use carbolic acid at a greater strength or for a longer period than is really needed to prevent or check putrefactive changes. As soon as these have ceased, or, after a reasonable time, have not manifested themselves by the presence of fœtor, the weaker the carbolic preparation the better; for there can be no doubt that carbolic acid is an irritant, and in some constitutions a very powerful *irritant:* hence it becomes a cause of protracted suppuration by over-stimulation. *How to adjust* the exact strength of the application in any given case is a matter of great difficulty; and it is doubtless one reason why many surgeons, who have given carbolic acid a trial with the object of averting putrefaction, have ceased to use it, thinking that at times it seemed to do more harm than good.

To obviate these difficulties, I make the cere-cloth of three degrees of strength, as it contains one-fourth, one-sixth, or one-eighth of carbolic acid. The strongest quality is needed in the management of the early stages of a wound; the others are more useful while cicatrisation is going on.

The exact formulæ for the cerates with which the calico is saturated are as follows: the form in each case being intended for twelve fluid ounces of the cerate in the liquid state—enough to spread about one square yard and a half of the cere-cloth. The quantities which I give are to be measured by bulk, and not by weight—that is, for the carbolic acid and the oil, as well as the paraffin and the wax which have been previously liquefied; for I find that in this way I get a greater uniformity in the composition.

No. 4, or the strongest form of the cerate, is composed of pure carbolic acid Calvert's, *liquefied*, f. ℥ iii; olive oil (coloured red with alkanet-root, to distinguish the cerate), f. ℥ iss; yellow wax, *liquefied*, f. ℥ iss; paraffin, *liquefied*, f. ℥ vi. Mix.

No. 6, the next in strength, and of a yellow colour, is composed of pure carbolic acid, f. ℥ ij; olive oil, f. ℥ iiss; yellow wax, f. ℥ iiss; paraffin, f. ℥ v. Mix.

No. 8, the weakest, which should be nearly white, is composed of pure carbolic acid, f. ℥ iss; olive oil, f. ℥ ij, f. ʒ vi; white wax, f. ℥ i, f. ʒ vi; paraffin, f. ℥ vii. Mix.

I trust that these few remarks will induce some of the members of the Association to make trial of this material; and that its use may serve to advance the general adoption of those principles in the antiseptic method of treating wounds which have been so ably and perseveringly advocated by Professor Lister.—*British Medical Journal, Sept.* 4, 1869, *p.* 267.

114.—THE CHOLAGOGUE ACTION OF MERCURY.

By Dr. J. Hughes Bennett, Reporter of Committee.

[The following are the conclusions regarding the cholagogue action of mercury arrived at by the committee of the British Medical Association appointed to experiment on this subject. We are unable to give the details of the numerous experiments made, but they apparently quite exhaust the subject, and test it in all its bearings. Of course the experiments were made on dogs, and their value depends upon the fact that its action upon these animals is the same as upon the human subject. We give the results of experiments with calomel on one of the dogs. The results were very much alike in all.]

During the five days on which calomel or blue pill was administered, the mean amount of bile secreted was diminished to 35·46 *grammes*, or nearly one half of what it was in the period preceding the administration of the mercury; although nearly as much food was consumed during as before the administration of the drug. [The mean amount of bile-solids was 1·812 *grammes*, of bile-salts 0·436 *grammes*. The average amounts for each *kilogramme* of dog were, fluid-bile, 1·93 *grammes;* bile-solids, 0·099; bil-salts, 0·023; for each 100 *grammes* of dry food, fluid bile, 24·18 *grammes;* bile-solids, 1·23; bile-salts, 0·29.] Moreover, during the second period, the average amount of bile secreted was, on the whole, greater on the days when no mercury was given than on the other days. No purgation or any other signs of specific action were produced by the mercury; but shortly after its first administration the strength of the animal began to decline. Sores, produced by the pressure of the apparatus, formed upon the back, in consequence of which the observations were interrupted on November 15th. The appetite failed, and the animal became so much emaciated that it was killed on the 28th of November.

It is evident that *in this case the* mercury diminished the biliary secretion and it is remarkable that it did so without impairing the appetite, and without producing purgation.

The foregoing observations seem to us clearly to show that blue pill, calomel, and corrosive sublimate, when given to dogs, in either small, gradually augmented, or in large doses, do not increase the biliary secretion; they do not even influence it so long as neither purgation nor impairment of health are produced, but they diminish it as soon as they produce either or both. It may be argued that, although we have proved this regarding dogs, it dees not follow that on man these drugs will have the same action. It must be admitted that some animals are altogether insensible to remedies which produce powerful effects on others; that different doses are often requisite to occasion similar results; and that there may be peculiarities so very decided as to render it impossible to infer what will be the action of a remedy on one animal from its influence upon another. But have we any reason to conclude that in the present instance there exists such difference in the action of mercury as to prevent any inference being drawn from the dog regarding man? All the facts with which we are acquainted show that it is legitimate to infer that the action of mercury ought to be regarded as similar in both cases. We have demonstrated that, as regards its action upon the salivary glands, mouth, intestine, appetite, and general nutrition, the influence of mercury is the same. We therefore infer that it is in the highest degree probable that its action on the hepatic secretion will also be the same. The only difference that there seems to be between the dog and man as regards the action of mercury, consists in the fact that in the dog larger doses are generally required to produce the same effects as those observed in man. But even here it may be argued that more marked results are required to satisfy the observer, and hence the greater dose necessary. These circumstances, therefore, cannot be held as affecting the conclusion at which we have arrived.

We have not deemed it worth our while to experiment upon any other animal, for we are unable to see how such experiments could materially strengthen our position. Even though we had shown that mercury, when given to a rabbit, cat, pig, donkey, or horse, diminishes the biliary secretion, it might still be said that this does not apply to man. But there are several special reasons which render experiments on these animals either impracticable or less reliable than those on the dog. Bidder and Schmidt failed to establish biliary fistulæ in cats; we therefore thought it not worth our while to spend money and time in making the attempt. Horses and donkeys are too unwieldy for the purpose, and have no gall-bladders, a peculiarity which in all probability would render it impossible to establish biliary fistulæ in them. In pigs, the hepatic secretion differs from that of man, inasmuch as it contains hyocholic acid, and, according to Strecker, no sulphur. It might, therefore, not unfairly be objected to any inferences from experiments on pigs, that inasmuch as the porcine differs from the human hepatic secretion, it could not be held as altogether probable that mercury would influence both in the same way. Everything seems to show that the animals used by the Committee are those best suited for the observations they have made. In addition to the therapeutical facts previously mentioned, which, after all, are the most important, there are these, that the qualitative composition of canine is the same as that of human bile, and that the dog, like man, can be fed on a flesh, vegetable, or mixed diet. In this respect dogs are superior to most other animals, even to the Quadrumana, which though in conformation most resembling man, are vegetable feeders. So far, therefore, as direct experiment, and exact observations are capable of determining the influence of mercury upon the biliary secretion, the Committee have no doubt that the dog is superior to the animals above mentioned.

But it may be supposed that mercurials possess some specific power of exciting the biliary secretion by acting on the orifice of the common bile-duct, and so stimulating the secretion through the nerves which connect it with the liver, just as pyrethrum and vinegar stimulate the salivary glands when they are applied to the orifices of the salivary ducts. It might also be objected that, inasmuch as in our experiments the common bile-duct had been *divided, the nerves* alluded to might have been so injured that stimulation of the orifice of the common bile-duct could no longer excite the secretion. It remains to be shown, however, that mercurials do specially excite the orifice of the bile-duct. It is not probable, at any rate, that their influence on the biliary secretion was, in the cases of dogs 6, 7, and 8, prevented by division of the hepatic nerves. In these experiments the common bile-duct was simply divided with as little injury to the neighbouring parts as possible (in previous experiments a portion of the bile-duct was removed), and these animals did not suffer in the least from the shock after the operation; so that nervous injury could not have been extensive. Moreover, in the case of dog 7, the parts around the common bile-duct were dissected after death, and the nerves proceeding from the solar plexus to the liver were found at some distance from the duct, and had apparently suffered no injury at the place where it had been divided. The Committee, therefore, do not attach any value to this objection.

But some may say that, although we have proved that mercury diminishes the biliary secretion in dogs, and that in man its action will in all probability be the same, yet our experiments have been performed on animals in a state of health; and that, had they been made on dogs with diseases such as those in which mercury has been *supposed* to increase the hepatic secretion, it would possibly, in the case of such dogs, have been increased. With such an hypothesis we need not seriously occupy ourselves until the objectors *prove* that, in any case whatever, mercury can increase the biliary secretion in man.

We have been unable to discover any facts brought to light in this or any other age which prove that mercury stimulates the biliary secretion. So far as we can make out, the notion that it does so originates in some vague statement made by Paracelsus, or the authors of his time, as to the good effects of mercury in what he has called "icteritia." But we repeat, not only do we not know how such a notion has arisen, but we are ignorant how to make direct observations on the subject in man. We have already stated that such observations are, in the present state of physiological chemistry, impossible. We do not deny the possibility of mercury being useful in some diseases of the liver. We simply say that the notion of its doing good by increasing the biliary secretion is untenable.—*British Medical Journal, May* 8, 1869, *p.* 415.

115.—THE ACTION OF PODOPHYLLINE AND TARAXACUM UPON THE LIVER.

By Dr. J. Hughes Bennett, Reporter of Committee.

[The following are the results of the experiments of the Committee of the British Medical Association, appointed to investigate the cholagogue action of mercury upon the action of podophylline and taraxacum upon the liver.]

1. Doses of podophylline, varying from 2 to 8 grains, when given to dogs, diminished the solid constituents of the bile, whether they produced purgation or not.

2. Doses which produced purgation lessened both the fluid and solid constituents.

3. During an attack of dysentery, both the fluid and solid constituents of the bile were greatly lowered.

4. Doses of the solid extract of taraxacum, varying from 60 to 240 grains, affected neither the biliary secretion, the bowels, nor the general health of the animal.—*British Medical Journal, May* 8, 1869, *p.* 419.

116.—RESEARCHES INTO THE ACTION OF MERCURY, PODOPHYLLINE, AND TARAXACUM ON THE BILIARY SECRETION, ETC.

[The following article is a review of Dr. Bennett's pamphlet on this subject, *by one of the Editors of the Practitioner.*]

An investigation of the action or want of action of mercury and taraxacum in influencing secretion of bile, is something like an inquiry by Dr. Colenso into the authenticity of the Book of Numbers. It is something to make the cheeks of many and many an old-fashioned practitioner turn pale, to shake the whole foundation of his therapeutical creed, to symbolise the end of all things at least as regards drugs. Podophylline is but a juvenile. That podophylline, albeit lauded in no measured terms for its flow-of-bile-producing qualities, should prove a traitor, was a blow which some little exertion of moral courage could enable the believer to survive; but that any doubt should be felt about the capabilities of calomel and blue pill, and extractum taraxaci, in "acting upon the liver," must have conveyed a shock in various quarters, from which we should imagine there are many still suffering. The investigation, however, has taken place. It has been conducted by men of proved ability. Its results are here placed before the reader in very intelligible form, and we confess, for our part, that at these results we are not one whit surprised. The experiments clearly show, what careful observation in practice must have taught the unprejudiced, that faith in the cholagogue action of these drugs has been misplaced, that our trust in blue pill from this particular point of view has been as ill-judged as it was strong, and that the days are rapidly drawing to a close when a practitioner of medicine will be able, without subjecting himself to ridicule, to inform his patient that his complaint is "all liver," and requires sundry doses of mercury, podophylline, or taraxacum.

In the experiments adopted by the Committee, dogs were employed. The fundus of the gall-bladder was attached to the abdominal wall, and a fistulous opening made in it through which the whole of the bile, secreted for at least twenty-four hours at a time, was collected. During the five days on which mercury was given, the quantity of bile secreted was diminished to nearly a half of what it was in the period preceding the administration of that drug. During the second period, the average amount of bile secreted was on the whole greater on the days when no mercury was given than on the other days.

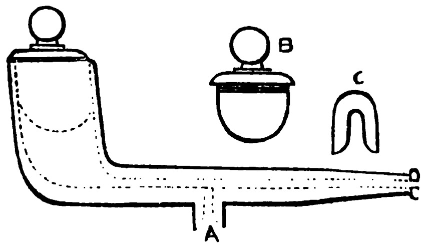
Dr. Bennett comes to the conclusion that mercury, when administered so as to impair the general nutrition, lessens the biliary secretion; that given to dogs, in either small, gradually augmented, or in large doses, it does not increase the biliary secretion. He finds that it does not influence it at all so long as neither purgation nor impairment of health are produced.

As regards the other drugs employed, doses of podophylline, varying from two to eight grains, when given to dogs, diminished the solid constituents of the bile, whether they produced purgation or not. Doses which produced purgation lessened both the fluid and solid constituents. Doses of the solid extract of taraxacum, varying from 60 to 240 grains, affected neither the biliary secretion, the bowels, nor the general health of the animal.—*Practitioner, June*, 1869, *p.* 355.

117.—MR. BIRD'S NEW INHALING PIPE.

Mr. James Bird, surgeon, of Seymour-street, Connaught-square, has recently invented a novel little instrument for inhaling the vapour or smoke of various medicinal substances and preparations, which, from the simplicity of its construction and the facility with which it may be applied to the administration of a number of important remedies by the air-passages, promises great advantages, and commends itself at a glance to most favourable notice. The use of Mr. Bird's "inhaling pipe" is likely to lead to a great extension of the practice of inhalation, and to important therapeutical improvements; and we understand that it is in use among the out-patients of the Victoria-park Hospital, and the report thus far is "decidedly good." It is also undergoing a very satisfactory trial at the Consumption Hospital at Brompton. The diagram shows the form and configuration of the pipe, and also the method of using it.

For the relief of asthmatic or anginoid paroxysms, neuralgia, tic douloureux, toothache, &c., as well as for any affection of the mouth, fauces, or air-passages, any of the following formulæ that may be considered appropriate may be inhaled by means of this pipe; and for throat fumigation it will only be necessary to remove the felt sponge, and any suitable preparation of mercury or iodine may be smoked over either ignited tobacco, hemlock, or stramonium, with the greatest facility, and the fumigation continued far more persistently



A, Air-passage; B, Top and sponge; C, Section at A.

than by any other of the usual methods. Many of the formulæ given below have been tried very successfully, and they are suggestive of many other combinations that will be found equally or even more effective as time and experience may hereafter dictate:—

℞. Chloroformi ♏x., sp. vini rectif. ♏xxx. M.
℞. Chloroformi ♏v. ad ♏x., sp. camphoræ ♏xxx. M.
℞. Chloroformi ♏v. ad ♏x., tinct. pyrethri ♏xxx. M.
℞. Chloroformi ♏v. ad ♏x., tinct. tolu ♏xx. M.
℞. Chloroformi ♏v. ad ♏x. sp. camphoræ, tinct. pyrethri, āā ♏xv. M.
℞. Chloroformi ♏v. ad ♏x. tinct. opii ♏x. ad ♏xx. M.
℞. Acidi carbolici ♏j. ad ♏ij., sp. vini rect. ad ♏xx. M.
℞. Chloroformi ♏v., tinct. daturæ tatulæ ♏xx. M.
℞. Chlorodynii ♏x. ad ♏xx.
℞. Chloroformi ♏v., tinct. humuli ♏xxx. M.
℞. Creosoti ♏iij. ad ♏viij., sp. vini rect. ♏xx. M.
℞. Acidi carbolici ♏j. ad ♏ij., acidi acet. glac. ♏iv., sp. vini rect. ♏xx. M.

Each of the above formulæ represents a medium dose for an adult for one period of inhalation, which may be renewed at stated intervals as deemed necessary.

We shall revert to this subject from time to time, as the administration of remedies by the air-passages is very suggestive. In fact, there is as great a number and variety of pharmaceutical and chemical preparations suitable for inhalation as there are disorders for which they are peculiarly applicable. Thus there is a vast field for medical observation, research, and practice, which has hitherto been but sparingly and unsatisfactorily investigated for the want of an inexpensive, convenient, and efficient instrument, such as Mr. Bird's inhaling pipe.—*Med. Times and Gaz., June* 19, 1869, *p.* 672.

118.—ON THE MEDICINAL USE OF PHOSPHORUS AND ITS COMPOUNDS.

By Dr. John C. Thorowgood, Senior Assistant Physician to the Hospital for Diseases of the Chest, Victoria Park.

[Phosphorus since its discovery, exactly 200 years ago, has been occasionally prescribed as a stimulant to the nervous centres. It has been used in the latter stages of typhus fever, in epilepsy, paralysis, melancholia, amaurosis, &c., occurring in debilitated subjects.]

The well-known fact that in cases where an unusual degree of wear and tear of the nervous system is being sustained, it is common to find an excess of phosphatic matter excreted in the urine, while the individual becomes increasingly weak, nervous, and irritable, appears to show that exhaustion of nervous force is in some way connected with a rapid oxidation and excretion of phosphorus from the system.

Considering these points, we can see that there is reason in seeking to administer phosphorus as an internal medicine where we have reason to suspect that the nutrition of nervous matter may be failing from a loss of its right proportion of this very essential ingredient.

We give phosphorus for its restorative action over weak nerve, just as we give iron to nourish and restore blood that is weak and poor from lack of this constituent. A difficulty and objection in the medicinal use of phosphorus has hitherto been the finding of an eligible and convenient preparation in which to enable the stomach to bear and digest the drug; for when the phosphorus is given dissolved in oil, or in ether, it forms a very nauseous mixture, which after a while appears to heat and irritate the stomach. Some practitioners persuade themselves that they are nourishing the brain and restoring the nerves if they administer phosphoric acid and various of the phosphatic syrups, now so much in vogue, to their patients. Few will deny that often much good is done by these preparations of oxidised phosphorus, but it seems doubtful if the restorative action of phosphorus, thus given in a state of complete oxidation, over nerve tissue, is equal to its action when given in a lower degree of oxidation, either as pure phosphorus itself, or else combined in the form of a hypophosphite; a salt which contains phosphorus at so low a degree of oxidation that it will ignite and burn at a moderate heat just as pure phosphorus would do.

Solid phosphorus, given in as small a dose as 1½ grain, acts as a poison, death seeming to take place in a gradual and painless way, with perfect retention of consciousness. There may be some vomiting, and the substances ejected appear luminous in the dark, as also does the stomach itself after death, when cut open in a dark place; but it is rare to find any marked inflammation of this organ; in the case of a bird poisoned by eating several grains of phosphorus, I could find scarcely a trace of inflammation anywhere in the digestive tract. In a case recorded by Casper, where a dose of three grains of phosphorus proved fatal to a lady in twelve hours, the body after death presented the extraordinary phenomenon of luminous vapor issuing from each of its outlets.

Analysis of the various tissues of animals poisoned by phosphorus has demonstrated the presence of phosphoric acid in unusual amount: this arises from the oxidation of the phosphorus in the body. Phosphoric acid is also increased in the urine of those who have taken any preparation of phosphorus. The action of phosphorus as a poison appears not to be due to any direct action on the nervous system, but to its preventing the assimilation of oxygen by the constituents of the blood; by thus checking oxidation it may cause the fatty degeneration of the liver so often met with in those who have been poisoned by phosphorus, and which is doubtless connected with the symptoms of severe icterus often seen in the patients before death.

For medicinal use there are solutions of phosphorus in ether and also in almond oil. One fluid ounce of ether will dissolve, after long digestion, 4 grains of phosphorus, and the oily solution is in the same proportion. The most recent formula for the phosphorated oil is that of the French Codex, for which I am indebted to Mr. C. Savory; it is as follows:—

Form from French Codex for Phosphorated Oil.—Phosphorus, 2 grammes. Oil of almonds, 100 grammes.

The oil is gently warmed with the phosphorus for about twenty minutes in a flask that is almost closed to exclude the air; when cool, the oil is decanted off from the undissolved phosphorus.

The oil, thus prepared, may be given in emulsion, or with cod-liver oil in a dose of from 3 to 8 drops, like the phosphorated oil of the Prussian Pharmacopœia, and is hardly less nauseous in flavour.

Another very useful preparation of phosphorus is a pill, made by melting finely-divided phosphorus with fat and then covering the pill with an impermeable coating.

Pills that I have seen and used, made by Messrs. Savory and Moore, contain $\frac{1}{40}$th of a grain of phosphorus in each pill. Both Dr. Radcliffe and Dr. Althaus speak favourably of the good effect of phosphorus, given thus in very small doses, as a valuable tonic in many chronic nervous maladies.

Some years ago the phosphorated oil was tried by Dr. Hughes Bennett in several cases of paralysis; but though the dose was a full one, the medicine had not much perceptible effect beyond causing a great increase in the quantity of phosphoric acid excreted by the urine.

A further and more recent trial of phosphorated oil has been instituted by Delpech, of Paris, in cases of paralysis, and he has found reason to speak well of phosphorus as a useful medicine in these cases; it seems to invigorate the system and so act as a tonic. It was thus that Dr. Anstie found phosphorus to act beneficially as a tonic in cases of epilepsy; over the actual fits the drug did not seem to have much power, but it relieved the languor and depression felt in the intervals of the fit in a very satisfactory way.

M. Tavignot, in France, has long been in the habit of using phosphorus in the form of a pill, containing $\frac{1}{70}$ of a grain, as a remedy in nervous, chlorotic, and strumous affections. In some neurotic and paralytic affections of the muscles of the eyeball, and of the lachrymal nerve, M. Tavignot has used liniments of phosphorated oil with advantage; and, dropped into the eye, this oil is asserted after some months' use to have a solvent action on cataract.

In numerous cases of chronic pulmonary disease, in which there seemed no special reason to think that tubercles were actually present, I have administered phosphorus in the form of the hypophosphite of potash with excellent results. This hypophosphite of potash is a deliquescent salt, very rich in phosphorus, taking fire and burning at a very low temperature, and possessing a resolving and liquefacient action so strongly marked that I have known great mischief to result from its incautious administration to persons affected with tubercular deposit in the lung. A highly intelligent surgeon near London, told me some time ago that he feared ever again to give the hypophosphite of *soda* to one who had tubercular disease, for he was sure that in the instance of a medical man, for whom he had prescribed this salt, it caused a rapid softening of the tubercular deposit. I said I could believe this easily if he had given his friend the hypophosphite of *potash*, but I doubted its happening when the soda salt was used in a moderate dose. To make certain on this important point we went to the surgery, and the bottle containing the remainder of the salt was hunted out from the obscurity to which it had been consigned: it proved to be a bottle of good and genuine hypophosphite of *potash*, as I had suspected.

In the case of a patient under my care at the Victoria Park Hospital for obstinate chronic bronchitis with thick fœtid expectoration and tendency to congestion of the lung, 5 grains of the hypophosphite of potash in camphor water effected a complete cure without any other medication whatever. To test the effect of the treatment I stopped the medicine during one week, and the effect was a marked increase of cough and thick fœtid expectoration; on returning again to the mixture these symptoms were entirely removed and the patient was dismissed cured.

In other cases of chronic bronchitis, remaining after the subsidence of an acute attack of the disease, and not, as a rule, complicated by the presence of emphysema of the lung, I have given the hypophosphite of potash in camphor water with much advantage.

As a gradual tonic and restorer of failing nerve force I prefer the hypophosphite of soda or of lime to the potash salt, and either of these salts appears to me to answer all the purposes of pure phosphorus as an internal remedy, while at the same time they are more manageable and agreeable medicines. In cases of nervous depression and torpor, with at times shooting neuralgic pains; or, in other cases, numbness and deadness of the limbs, as from feeble circulation, the hypophosphites prove useful, and the lime or soda salt can be given according to the way in which the stomach may seem to bear the one better than the other. When anæmia is present, the citrate of iron can be added *to the hypophosphite of soda*, or else the syrup of the hypophosphite of *iron, or of iron with quinine*, can be employed; and either of these syrups will prove an active tonic, removing neuralgic pains, chest oppression, and languor of circulation in a very evident way.

In cases of pure hypochondriasis, with tendency to true melancholia, I have used the hypophosphite of soda in full doses, but have not found it to exercise the least effect over this form of depression, while from very small doses of strychnine the patient obtained most unmistakeable relief. I have noted in other cases that, when a depressed state of system was connected with any obvious form of dyspepsia, the hypophosphites were of very little benefit. Among other cases in which I have tried phosphorus in the form of either the hypophosphite of lime or soda, I may enumerate two cases of psoriasis of the skin in which the action of the drug was strikingly beneficial. I have tried the hypophosphite of lime in a very obstinate case of acne, but here it failed to relieve, though subsequently the sulphur water of Harrogate proved eminently useful. In numerous cases of phthisis pulmonalis I have administered various hypophosphites, with a view of increasing and restoring wasted nerve force; in an exhausted state of which I believe many true cases of true tuberculosis to have their origin. Such experience as I have had leads me to think, with some others who have made careful trial of the hypophosphites in phthisis, that these salts are certainly to be regarded as valuable remedial agents in the treatment of this disease, especially in its premonitory and early stages.—*Practitioner, July,* 1869, *p.* 14.

119.—STRYCHNIA AS A SUBSTITUTE FOR QUININE.

By William J. Marsh, Esq., Littlemore.

With reference to the quinine difficulty at St. Bartholomew's and elsewhere, it may not be amiss to remind the profession that about the fortieth of a grain of strychnia (equal to three minims of the British Pharmacopœia solution) is a medicinal equivalent for one grain of disulphate of quinine in nearly all cases where a vegetable tonic is indicated. Half a pint of mixture containing strychn. gr. $\frac{1}{40}$ in ℥ss., if swallowed by accident or design, in one dose, would not cause more inconvenience than the same quantity of mixture containing quin. disulph. gr. j. in ℥ss. The price of strychnine is about half as much again as that of quinine, but the very small quantity required as a medicinal equivalent renders it, in the end, all but infinitely cheaper. My own rather extensive experience of the two drugs in intermittent disorders in the fens of Lincolnshire enables me to state that, prejudice aside, the reputed "anti-periodic" virtue of quinine is not superior to that of strychnine. Both are powerful tonics, the chief difference medicinally being that of equivalent dose.—*Med. Times and Gazette, June* 12, 1869, *p.* 647.

120.—A CONVENIENT APPARATUS FOR THE ADMINISTRATION OF CHLOROFORM.

By Alfred Coleman, Esq.

This instrument, which I prefer calling convenient to new, inasmuch as so many and varied plans for the administration of chloroform have been introduced that mine in principle at least may not be new, will, I think, be found to possess, from its construction, the following advantages. The apparatus consists, firstly, of a graduated bottle which contains the chloroform, at all times ready for use, being kept air-tight by a metal cap, which screws over its neck. When using the inhaler the cap is removed and a perforated glass stopper placed in the neck of the bottle; through this stopper the chloroform can escape drop by drop. The bottle thus arranged is screwed into the anterior portion of the inhaler, a metallic tube of about one and a half inch in diameter, which contains a piece of sponge so placed as to receive the chloroform as it escapes from the bottle. This first portion of the apparatus communicates with a metallic hollow sphere about two inches in diameter, the entrance and exit to which are covered with fine wire gauze, the use of this portion of the inhaler being to allow the chloroform to become thoroughly incorporated and evenly mixed with the air which enters the instrument. At the other extremity of the sphere is attached a universal joint with the ordinary Snow's face-piece. When employing the inhaler, it is advisable first to moisten the sponge with chloroform, or better still to drop it into warm water and then squeeze it out dry. The face-piece having been adapted to the face of the patient, the latter may be allowed to breathe air for a little time, which generally has the effect of overcoming nervousness; then the bottle holding the chloroform being turned round so as to be inverted, the chloroform escapes drop by drop into the sponge through which the patient inhales air, and the quantity administered can be easily observed by the divisions marked on the bottle.

In practice I have found this inhaler to possess the following advantages:—

1. The chloroform can be very gradually and evenly administered.

2. By means of the wire gauze and the sphere, it becomes so thoroughly mixed with the air as never to produce irritation of the glottis or air-passages, and in this respect most nearly resembles the valuable apparatus of Mr. Clover of any I have seen.

3. This instrument is ready for use almost at a moment's notice.

4. The quantity of chloroform administered can be ascertained at any moment.

5. At no time, I believe, can more than 3 to 3·5 per cent. of chloroform be inhaled, which, though less than the percentage of Mr. Clover's apparatus, has never failed in my hands to produce the desired effects.

When employing the inhaler for operations upon the mouth, I first narcotise the patient in the manner described, and then remove the face-piece, adapting the small one, which just covers the nose and permits a sufficient quantity of chloroform to be inhaled through this air-passage—even when the mouth is open—to keep up the anæsthesia.—*St. Bartholomew's Hosp. Reports, Vol.* v., 1869, *p.* 105.

121.—EXCESSIVE USE OF MORPHIA, A DRACHM OF THE SULPHATE BEING TAKEN AT ONE DOSE WITH IMPUNITY.

By Dr. D. MacGillivray, Physician to the Ottawa Protestant Hospital, Canada.

In the month of June, 1867, I was called to visit Mr. —— M. D. B., staying at one of the hotels in this city, where he was confined to his room, having symptoms of delirium tremens. He was 37 years of age, stout, muscular, and plethoric, and of intemperate habits, had resided in New York city for the last six years, where he practised his profession as barrister-at-law. About the commencement of January, 1865, he had an abscess in the thigh, from which he suffered severe and continuous pain, and in order to allay his agonies, and induce sleep, he was ordered by his physician to take a drachm of laudanum each night, and a similar quantity during the day. He continued by that prescription for a period of three months, until every symptom of his complaint had entirely disappeared; he then discontinued it, but much to his discomfort, becoming nervous, irritable and wakeful, and subject occasionally to intolerable tremors. He was forced to resume his habit. He made repeated efforts to master his desires, and stop the use of opium in any form, but without avail, and finding it impossible to do without it, he was obliged to resume his accustomed draughts, gradually increasing the dose from time to time as nature seemed to suggest and require it, until he had fostered himself into the daily habit of taking astonishingly enormous quantities. In order to satiate and appease his abnormal appetite he found it necessary to take half a drachm of sulphate of morphia daily, some days more and some days less.

He took as much as a drachm and a half in thirty hours, and found no alarming *effects to follow*; he frequently took three ounces of laudanum at one gulp, and repeated the same dose within twenty-four hours, with the only effect of causing snatches of sleep, lasting from one to four hours. He had always a good appetite for food, and enjoyed comparatively good health. Abstinence from opiates was latterly followed by troublesome diarrhœa, associated with the other symptoms already named; when sleep occurred it was disturbed by frightful dreams. He was an inveterate smoker and a hard drinker, almost incessantly revelling in debauchery and profligacy, the more whisky he drank the more morphia he required to take. Until about a year ago he used laudanum almost exclusively, but to avoid the inconvenience arising from carrying about him such large quantities as he required to use, he betook himself to the use of morphia, of which he kept abundance on hand, but he took laudanum occasionally.

One evening, after he had recovered from his illness, at about seven o'clock, while I was present with him in his room, in order to assure me of the capability of his system resisting the effects of opium, an experiment I was very reluctant to witness, he opened a parcel containing twelve small bottles, each of which contained a drachm of sulphate of morphia, he took up one of these bottles and emptied its whole contents into a tumbler, which he had half filled with whisky, stirred the mixture well, and swallowed the terrible dose at one gulp (a quantity sufficient to destroy twenty or more lives), and in the course of fifteen or twenty minutes after drank down at one draught four ounces of laudanum, which he had procured in a drug store close by.

An hour after performing the dangerous experiment he went to spend the evening in the theatre, where he enjoyed the drama with all due complacency. I visited him at his rooms in the hotel at eleven o'clock the same evening, and saw him take nearly a fourth of a drachm of morphia in a glass of whisky before retiring. Fearing that the experiment might have proved too much for him during the night, I called to see him at an early hour the following morning, and to my utter astonishment found him wide awake, after having passed a quiet night, and apparently suffering from no ill effects of the poison. He asked for more whisky and morphia; I strongly remonstrated, and cautioned him against the results sooner or later to follow such enormous doses of poison and such flagrant abuse of his constitution—his only reply was, "I am used to it, and there is no danger." Satisfied and easy in his own mind that there was no danger, and that the seeming impunity he enjoyed in the past he would still enjoy in the future, he was willing and determined to pursue his dangerous habits. Two days after he went home to his family in New York, and was gone nearly four months; at the end of that time he returned to this city with the intention of taking up his residence here, with a view to practise his profession. When he arrived here he consulted me for urethral stricture, which caused him intense pain, and to allay it he was obliged to use opiates in larger quantities.

He was now feeble and exhausted, worn and emaciated, apparently fast sinking a victim to his evil habits, of the dangers attending which he was now fully convinced. He had been addicted to this destructive vice of opium eating for nearly three years, and it had gone on increasing from day to day until it had acquired its alarming and incredible magnitude. With the perfect consciousness, at last, that he was destroying himself, and with every desire to struggle against the insatiable cravings of his diseased appetite, he found it utterly impossible to offer the slightest opposition to them. In vain did he try to resist the baneful temptation. His love for ardent spirits was so strong, his appetite for opium so uncontrollable, that he must still indulge in the use of these insidious poisons, which he knew were undermining his system, slowly but surely, and as an inevitable consequence, nature yielded to their pernicious influence; an attack of delirium tremens supervened, and death closed his sad career.—*Canada Medical Journal*, *Feb.*, 1869, *p.* 352.

122.—AN EXPERIMENTAL INQUIRY INTO THE USE OF CHARCOAL RESPIRATORS AS A MEANS OF WARMING THE AIR INSPIRED.

By Dr. Wm. Marcet, F. R. S., Assistant Physician to the Hospital for Consumption and Diseases of the Chest, Brompton.

[The use of charcoal respirators was first advocated by Dr. Marcet, and the object of the present paper is to show, experimentally, that charcoal possesses in a high degree the power of warming the air taken into the lungs of the person who wears it.]

In the following experiments I employed an ori-nasal respirator, so constructed that the air for respiration passed freely through a thickness of 7-16 in. (or nearly ½ in.) of tight packed fragments of charcoal. The respirator fitted closely to the mouth and nose, so that the whole of the air breathed found its way through it. The centre of the respirator was perforated in order to admit the stem of a thermometer through it, the instrument blocking up the hole. Thus the bulb of the thermometer could be inserted into the mouth through the respirator without interfering with its action, as respiration could be carried on through the charcoal the same as before.

My thermometer was very carefully made by Casella, and divided into fifths of a degree centigrade, allowing of 0·1° to be estimated (the degrees have been tabulated in the Fahrenheit scale.) I read the instrument without any difficulty with the assistance of a looking-glass placed at a certain angle close to the stem of the thermometer, and which reflected it to my eye. By this means the rise and fall of the mercury could be clearly and accurately observed while the bulb of the thermometer was in my mouth.

The temperatures obtained are given in the form of a table appended to the present communication. In every experiment they were taken as follows:—

1st. The temperature of the air.

2nd. That of the air in the mouth kept slightly open, breathing being carried on through it at the time. Great care was taken that the bulb did not come into contact with the tongue or palate, so that the temperature of the air in the mouth alone should be taken; and in every experiment the bulb of the instrument was kept as nearly as possible in the same position in the cavity of the mouth.

3rd. That the air in the mouth through the respirator, the thermometer being in other respects as much as possible in the same condition as when the temperature of the air in the mouth was ascertained without the interposition of the respirator. I thus obtained the mean temperature of the air in the mouth while the respirator was in use. This mean temperature might also be expressed as the mean of the temperature between the minima and maxima of the oscillations of the mercury during the inspirations and expirations; these oscillations amounting in ordinary breathing to about 2° Fahr., when the respirator was not worn, and about 0·7° when the respiration was carried on through the charcoal.

A statement of the difference between the mean temperature of the mouth with and without the respirator has appeared to me the best mode of representing the increase of warmth of the air breathed due to the action of the respirator. The present inquiry is, however, open to inaccuracy from three different sources. The first is the difficulty, if not the impossibility, of placing the thermometer in the cavity of the mouth respectively in the same condition in every experiment. The second is the cooling action of the cold external air on the lining membrane of the mouth, which of course reacts on the thermometer. The third is the cooling of the bulb of the thermometer from the evaporation of any moisture which may have condensed upon it.

These experiments cannot, therefore, be considered as absolutely correct. I believe, however, their results may be accepted, considering the object I have in view, which is exclusively practical. The result obtained is as follows: Six experiments were undertaken when the temperature of the air varied from 55·7° Fahr. *to 40·1° respectively* (in each experiment). The increase of temperature of the air while passing through the mouth during the act of respiration due to the charcoal respirator, ranged from 8·3° to 11·5°. The additional warmth caused by a *metallic respirator* was 9·3°; while that produced by a *charcoal respirator*, the experiment being undertaken under the same circumstances, amounted to 11·5°, giving 2·2° in favour of the charcoal. One experiment, however, is not sufficient to establish the priority of one respirator over the other, so far as their power of imparting heat to the breath is concerned; but supposing them to be equally available in that respect, the well known property of charcoal of purifying air which is drawn through it, both from foreign gases and mechanical impurities, ever so finely divided, is enough, I believe, to show the superiority of the charcoal respirator over the other.

It follows, also, from the present experiments, that a charcoal respirator will not only warm the cold air breathed out of doors, but will also impart additional heat to the air of a room comfortably warm, although considerably under the temperature of the body; and it is questionable whether, in certain cases of excessive irritability of the throat or bronchi, in-door use of the respirator may not be attended with advantage. My experience is now tolerably extensive as to the out-door use of the respirator in winter time; a number of my patients at the Consumption Hospital are wearing them in cold or foggy weather, or to rid air of smoke or other impurities, and they all agree as to the comfort and benefit they experience from their use.

The charcoal respirators are manufactured by Mr. Rooff, of No. 7 Willow-walk, Kentish-town; and I may add that I am in no way pecuniarily interested in their sale.—*Lancet, Nov.* 6, 1869, *p.* 632.

123.—ON THE ACTION AND USES OF IPECACUANHA.

By Dr. Charles Douglas Phillips.

Ipecacuanha exerts a power over all diseased mucous membranes in checking profuse mucous secretions, whether from the air-passages, the alimentary canal, or the genito-urinary apparatus. It is a most useful remedy in spasmodic coughs attended with profuse mucous expectoration and vomiting, especially in those troublesome coughs, accompanied by vomiting, which are incident to pregnancy. Its beneficial operation is clearly discernible in most cases of continued and obstinate retching or vomiting, where the stomach is not primarily affected, but disturbed by sympathy with some other part or organ of the body, whether the primary affection be acute or chronic. There are cases of sickness and spasmodic cough during pregnancy, accompanied by ulceration of the uterus, which fail to yield to it; but in many of these cases it will succeed if a few doses are administered before the patient raises her head in the morning.

The following case, amongst many others, came under the writer's observation last year: it is here mentioned as characteristic of some of the therapeutic actions of this drug:—

Mrs. E. M., aged 33, of a nervous-bilious temperament, came under the writer's care May 27, 1868. She had enjoyed good health until within the preceding five months, when she had suffered much from loss of appetite, nausea, vomiting, and frequent retching, especially in the morning. These symptoms steadily increased, and about four weeks later a severe cough ensued, accompanied by much dyspnœa and profuse mucous expectoration: the cough rarely subsided without first bringing on retching or vomiting. For the six weeks last past the cough and dyspnœa had so seriously disturbed her rest as to prevent sleep, or even lying down, for hours through the night; and the vomiting and retching, which occurred eighteen or twenty times in the twenty-four hours, had so emaciated her as to cause serious anxiety to herself and her friends. She was now about six months advanced in pregnancy, pale, weak, and emaciated; had a bad cough, with profuse viscid expectoration, and much dyspnœa, the cough almost invariably attended with vomiting or retching; appetite capricious and bad; tongue brown; vomiting after each meal, quite independent of cough; bowels regular; urine scanty and loaded with lithates. The form of the chest well developed; percussion normal throughout; sibilant and sonorous râles accompanying inspiration and expiration, anteriorly and posteriorly on both sides; respiration 18 per minute; cardiac sounds normal; pulse 72, weak; temperature 98½.

℞. Vinum ipecacuanhæ ʒj.; aquæ pur. ℥vj. Mix.

A teaspoonful to be taken frequently for cough or vomiting.

June 8, 1868. Greatly improved in appearance; feeling stronger; no sickness or retching for the last six days; able to lie down and sleep throughout the whole night, the cough, dyspnœa, and wheezing having almost left her; appetite good; tongue clean; troubled with flatulency; bowels regular; urine clear, dark in colour; pulse 72, stronger.

Repetatur medicamentum. Not to be used except in case of cough, vomiting, or retching becoming troublesome.

July 15, 1868. No vomiting or retching since last visit; cough recurring only two or three times in the forenoon, giving her no trouble; flatulency still continuing, with oppression after meals; appetite excellent; tongue clean; bowels regular; gaining flesh rapidly.

℞. Tinct. nucis vomicæ ʒss; aquæ pur. ℥vj.

A tablespoonful to be taken morning, noon, and night.

In January, 1869, Mrs. M. was looking fat and strong, and said she had had no return of cough or sickness since the date last mentioned.

The writer has now before him twenty-three carefully recorded cases of whooping-cough. In most of these the cough came on in violent paroxysms, continued until a quantity of viscid mucus was ejected from the lungs by the mouth, and often by the nostrils, and increased in intensity until the contents of the stomach were evacuated.

In all these cases, where the vomiting had been more troublesome than the whoop, ipecacuanha has given very marked relief.

The dose recommended is half a drachm of the vinum ipecacuanhæ in four ounces of water, a dessert-spoonful to be taken every one, two, or three hours, according to the severity of the cough. Children under five years old should only take a teaspoonful of the same mixture, but many children of this age can tolerate, and are benefitted by, much larger doses.

In the capillary bronchitis of children, even when complicated with croupy symptoms, it acts well. In these cases the writer orders ʒss of vinum ipecacuanhæ to four ounces of water, a teaspoonful to be taken every one or two hours, or much more frequently if the symptoms are urgent.

In many cases of nocturnal spasmodic asthma, in which hours are spent in great distress, with livid face and lips, loud wheezing throughout the chest, and want of breath, causing fear of suffocation, if there is no organic disease of the heart or the lungs, ipecacuanha will give quick and marked relief. Five drops may be taken as a dose, repeated every ten to thirty minutes for two or three hours, unless relief comes much sooner, in which case the dose should be diminished and taken less frequently. Care should always be taken to avoid its emetic or nauseating effect.

In these affections of the lungs, its expectorant and antispasmodic character cannot be doubted, nor its curative action in controlling and stopping the abnormal secretion of mucus.

Hæmorrhage in the early stage of tubercular pthisis, and in most stages of this disease, when produced by engorgement of the bronchial mucous membrane, and accompanied by little or no acceleration of pulse, or increase of temperature, is often readily stopped by ipecacuanha. In hæmatemesis arising from vicarious menses, and also in some cases of menorrhagia, it is very useful.

In many cases of dysentery it lessens the bloody and mucous discharge, and removes the cutting pains and tenesmus, especially in the early and late stages of the disease. In cases of dysentery or diarrhœa, where nausea, vomiting, or retching exists, ipecacuanha will stop the sickness, and at least control the dysentery or diarrhœa. The watery diarrhœa during dentition, the diarrhœa with green evacuations, and the dysenteric diarrhœa, which are so common among children, rapidly yield to this drug. Vinum ipecacuanhæ is effective in dysentery and diarrhœa, but the writer has preferred the pulvis ipecacuanhæ, considering its action more speedy and trustworthy.

It is more necessary to vary the dose in dysentery than in any other class of cases, one grain every one or two hours being quite sufficient with some persons, whereas others require ten, twenty, or more grains as a dose. These larger doses sometimes, when first administered, bring on vomiting, which it is well to avoid; but if the patient is kept lying on the back, and the dose persevered with, it can generally be tolerated, and a rapid recovery often follows.

In the diarrhœa and dysenteric diarrhœa of children, one-fourth to one half of a grain, with a little white sugar, at intervals of one to three hours, is generally sufficient, but the quantity must be increased if necessary.

In this paper ipecacuanha alone has been considered, not its relative value as compared with other drugs. It is not alleged to be the best remedy in all the cases enumerated above, but in all it is a useful one.

[Dr. Ringer's late work on Thérapeutics having asserted the effects of small doses of ipecacuanha in checking vomiting, the Editor wishes to accumulate evidence upon this matter, as to which he is at present unable to pronounce any opinion. But he calls attention to the fact that should it be proved, as seems likely, that small doses of ipecacuanha exert a tonic effect upon the sympathetic system generally, it will be the most effective blow yet given to the homœopathic theory of *similia similibus*. It would be a farther illustration of the fact, which is forcing itself more and more upon our notice, that the words "similar" and "opposite," as regards the relations between drugs and diseases, are equally incorrect; being both of them based on the metaphysical fallacy that a drug must always act after one *kind*, though in different *degrees*, whatever the dose in which it may be given.—ED. PRACTITIONER.]—*Practitioner*, *Nov.*, 1869, *p.* 277.

124.—NEW MODE OF ADMINISTERING NITROUS OXIDE.

By ALFRED COLEMAN, Esq., London.

Some interesting improvements in the mode of administering nitrous oxide gas have recently been perfected by Mr. Coleman, at the Dental Hospital of London. On Thursday, the 7th inst., this gentleman anæsthetised, upon a new plan, eight patients in the hospital, for the removal of teeth. All who have had much experience in the use of the protoxide of nitrogen have found that any admixture of air with the gas greatly impairs its efficacy. The insensibility is less rapidly and less perfectly produced under these circumstances, whilst the patient is invariably more excited during, and more prostrated after, the inhalation of the gas. In order, therefore, to secure the entrance into the blood, through the lungs, of pure nitrous oxide without accompanying air, Mr. Coleman so arranges his apparatus that he first dilutes with nitrogen the oxygen of the residual air of the lungs, and then permits the patient to breathe pure nitrous oxide. By this method the patients become more speedily unconscious, and the anæsthesia lasts longer, at the same time that they appear throughout the administration calmer than is usually the case under the ordinary mode of administration. It is a noteworthy fact, also, that in none of the eight cases was there the least appearance of lividity. During the inhalation of the nitrogen, the pulse was noticed to fall steadily, but upon supplying the nitrous oxide it soon regained its force and frequency. Mr. Coleman stated to those who witnessed the inhalation, that he beleived that hydrogen would be more successful than nitrogen; but as the inhalation of that gas often produces disagreeable sensations, he preferred trying the effects of nitrogen before employing hydrogen. If by this new method of administration it shall be found that the anæsthesia produced by nitrous oxide can be rendered more lasting, say for a period of even only ten or fifteen seconds, it will be a great boon to the dentists, who oftentimes have most uncomfortably to expedite their operations with it. As regards cost, the above plan would be found the most economical of any yet devised. —*Lancet*, *Oct.* 16, 1869, *p.* 550.

125.—THE OXALATE OF CERIUM IN DYSPEPTIC VOMITING.

By Dr. S. A. Lucas, Kirkdale, Liverpool.

I fully agree with Dr. Curran as to the beneficial effects of the oxalate of cerium in the nausea of pregnancy. I have employed it for vomiting from various causes, with good effects. I have had a case lately of dyspeptic vomiting, where its *tonic* and *sedative* effects were well marked. The patient, a married lady, had been attended by a doctor for two months, suffering from severe vomiting many times in the day. The doctor tried many remedies—bismuth, chlor. potass, lime-water, creasote, hydrocyanic acid, &c.—without giving relief to the patient; he gave the case up. I was sent for, and found the lady suffering from facial neuralgia, as well as the vomiting. I prescribed a liniment to be applied to the face (equal parts of lin. chloroformi and lin. belladonnæ), and put her at once upon—

℞. Cerii oxal., gr. xxxvj.; ext. hyos., gr. xxiv. Div. in pil. xij.; cap. j. ter in die.

For two days afterwards she had no vomiting; on the third day she vomited once, which I believe due to her having eaten potatoes (quite against my prescribed regimen). I made her go out for a short walk every day, and by the end of the week vomiting and neuralgia had disappeared, and her health rapidly returned.

It may be seen from this that the oxalate of cerium in its maximum dose (gr. iij.) effected a cure where all other well-known remedies failed; and I hope the profession will give an extended trial to a drug that has not received the attention it merits since its introduction by Professor Simpson.—*Medical Press and Circular*, *Aug.* 4, 1869, *p.* 94.

126.—A CEMENT FOR TEETH.

The French and German dentists prize highly the following formula as a cement for teeth: Finely powdered borax, 1 part; freshly calcined oxide of zinc, 9 parts; finely powdered silex, 2 parts; mix well together, and make a firm plastic mass.—*New York Medical Record*, *June* 15, 1869, *p.* 180.

127.—ON THE INFLUENCE OF ALCOHOL UPON THE TEMPERATURE OF THE BODY.

By Prof. C. Binz, University of Bonn.

[The following paper presents a proof of the results which have been obtained at the instigation of the author by some of the students who are working in his pharmacological library. Lichtenfels and Fröhlich published in 1852 some scientific investigations on the action of small non-poisonous doses of alcohol on the animal economy, and the results they obtained were as follows:]

1. The temperature in the mouth was 37°·0 Centigrade. About 24 ounces of beer, containing between 3 and 4 per cent. of alcohol, were then drunk: in fifteen minutes the temperature had fallen to 36°·5, and remained so for sixty and even for one hundred minutes.

2. The normal temperature was 36°·9 Cent.; a flagon of wine containing about 8 ounces was drunk, and after forty minutes the temperature had fallen to 36°·6.

3. Four ounces of water containing 8 per cent. of alcohol, warmed to 36°·8 Cent., were quickly *ingested.* The thermometer stood previously at 36°·9;

after five minutes at 37°·1; after twenty-five minutes at 37°·0; after forty-five minutes at 36°·9.

4. Two ounces of water, containing 17 per cent. of alcohol, were drunk whilst lukewarm. In two minutes the thermometer rose from 36°·6 to 36°·9. In thirty minutes it stood at 36°·7; in forty-five minutes at 36°·6. We may easily convince ourselves then, that, as the Viennese authors maintain, the primary augmentation of temperature is occasioned by the stimulating action of the alcohol on the blood-vessels of the mouth. More recently Tscheschechin, of Russia, has published the results of some researches which he has made on rabbits. He mixed 10 C.cm. of alcohol of 80 per cent. strength with a little water, and injected the fluid into the stomach. He found that in twenty minutes the temperature sank from 39°·2 to 37°·2. Both the respiration and the pulse became quicker, and the vessels of the head were strongly injected. After the lapse of rather more than an hour the thermometer showed a temperature of 35°·7. The animal was insensible, but recovered in a few hours. Very similar results were obtained by Möller, of Königsburg. Both authors state that when large doses of alcohol are administered to warm-blooded animals, their temperature becomes reduced; and Möller adduces the well-known fact that a drunken man soon freezes to death when exposed to severe cold.

All the observations detailed in the following pages were made with the Centigrade thermometer (Celsius'), the one now very generally employed both in medical practice and by the scientific world generally, and which, it may be added, like the decimal system, may be regarded as the most rational and intelligible instrument. In all about forty-nine experiments were made. The first series were undertaken with the view of determining the effect of very small quantities of alcohol upon the temperature of the body. We started with the conviction that the stimulating influence of the alcohol was as indubitable on the vital properties of the juices, as on the nervous system. But the results of our experiments were not in accordance with this view. I append only one of this series of experiments, since all the others gave identical or very similar results.

Experiment.—Strong terrier, about two years old, deprived of food for ten hours previously.

A.M.	Temp.	Pulse.
10.40	38°·7′	114
10.50	38 ·7	110
10.55	38 ·6	110

Two cubic centimetres of alcohol 86° per cent., diluted with a little water, were subcutaneously injected.

A.M.	Temp.	Pulse.
11.10	38°·5′	112
11.30	38 ·1	118
12.0	38 ·2	116
2.30 p. m.	38 ·5	—

After a few days had elapsed, the same dog had one C.cm. of the same alcohol, diluted with water, injected subcutaneously. The temperature quickly sank about 0°·4 Cent., but after the lapse of two hours was again normal.

Experiments on man, made with small quantities of alcohol, led to very similar results. Half a glass of light hock, or a small glass of cognac, caused a fall of from 0°·4 to 0°·6 in a very short time.

The second series of experiments were instituted to determine the effects of large doses of alcohol.

Experiment.—A strong poodle about four years old.

A.M	Temp.	Pulse.
11.15	38°·4′	89
11.30	38 ·3	92
11.45	38 ·3	90

In the course of half an hour from this time, 25 C.cm. of alcohol, mingled with water, were introduced into the stomach. The animal made attempts to vomit, but was prevented by exerting pressure on the œsophagus.

In the course of six minutes, it fell over on its side in a state of intoxication.

P.M.	Temp.	Pulse.
12.30	37°·5′	108
1.0	37 ·1	112
2.0	36 ·7	113
3.0	36 ·5	117
4.0	35 ·8	112
5.0	35 ·8	113

The dog was then apparently lively, but walked with a very irregular gait, and occasionally vomited some tough mucus, having a strong odour of alcohol.

Experiments were now made to ascertain the effects of poisonous doses; and it was found that both in dogs and rabbits a constant fall in temperature occurred, amounting to between 4° and 5° in from one to two hours, at which period death took place.

In the third series of researches, dogs, cats, and rabbits were treated by the injection of pus, or of the juice of putrefying fodder, and having been thus thrown into a state of fever, were treated with alcohol.

Experiment.—Into a large shepherd's dog of mongrel breed, 3 C.cm. of pus from an inflammatory abscess were injected beneath the skin of the back.

P.M.	Temp.	Pulse.
3	38°·9′	114
3.30—Injection of the pus.		
4	39 ·4	126
4.30	40 ·1	120
5	40 ·6	127
6	40 ·5	122

At this time 5 C.cm. of alcohol of 86 per cent., diluted with water, were injected into the stomach.

P.M.	Temp.	Pulse.
6.30	40°·0	130
7	39 ·6	126
7.30	39 ·2	120
8	39 ·0	122
8.30	39 ·3	126

As violent vomiting now supervened, 4 C.cm. of alcohol, diluted with 6 C.cm. of water, were injected subcutaneously.

P.M.	Temp.	Pulse.
9	39°·0	132
9.30	38 ·8	128
10	38 ·8	131
A.M.		
9 next day	39 ·0	141

The injection of 5 C.cm. of alcohol, with an equal quantity of water, was now practised subcutaneously.

A.M.	Temp.	Pulse.
9.30	39°·1	136
10	38 ·7	133

No more alcohol was administered after this, and the febrile symptoms were now observed to rise rapidly in intensity, and the animal soon died. Throughout the whole experiment, no trace of intoxication was exhibited by the animal. After the alcohol had been given, it sat quietly in the corner, whimpered slightly, and had its eyes constantly open.

A final series of experiments were occupied with endeavours to solve various questions, and first, in what way alcohol operated when taken coincidentally with full diet. It was found, in regard to this point, that the so-called fever of digestion,—that is, the exaltation of temperature after meal times,—was comparatively slight. This was in accordance with the observation of Vierordt, that *after food* the amount of carbonic acid exhaled is considerably increased, but when alcohol was taken with the food the quantity of that gas eliminated was less. Just so, here it appeared, that the augmentation in the temperature of the blood, resulting from a full meal, either did not occur at all, or only to a very slight degree, when alcohol was taken.

In all these cases the temperature of the rectum was alone taken. An experiment made on a man in whom the temperature of the mouth and anus were coincidently taken by the introduction of a thermometer into each, showed that there was no difference between them, and that consequently the place where the temperature was taken was a matter of no importance. The same result was obtained in the case of a rabbit in which one thermometer was introduced *in ano*, and another beneath the skin of the back.

As a consequence of these investigations, the alcohol question may assume a somewhat different aspect. The introduction of the thermometer into medical practice, to which only the unscientific will object, has taught us that high temperature in the febrile state constitutes one of the most dangerous symptoms in various diseases. Alcohol is thus frequently called upon to act as a preservative of life by its antipyretic properties. It removes the conditions which induce paralysis of the brain and heart; and it should be employed in those places especially where the thermometer shows that too high a temperature is present. In this respect it approximates to quinine in its action, but at the same time possesses in addition its well-known stimulating action on the central nervous system and upon the heart. It is self-evident that its value in this respect is not in any way impaired by its antipyretic properties. In most cases, however, it will be found that the depression of the powers of the system is directly dependent upon the temperature of the blood, and passes off when it falls.

Two circumstances are opposed to the extensive employment of alcohol in acute disease: first, its effect upon the pulse; and secondly, its influence on the tone and diameter of the vessels.

In all our experiments, the number, and it appeared also the strength, of the contractions of the heart rose. Whenever, therefore, such an effect is from any cause to be feared, alcohol is obviously an improper remedy to be employed.

According to Waller and the remarkable researches of Cohnheim, pus originates in the passage of the moderately enlarged white cells through the relaxed walls of the dilated blood-vessels. I have convinced myself by direct observation of the perfect accuracy of the statements of Cohnheim, though they are still contested by some investigators, and have elsewhere, though undoubtedly with another object in view, furnished a sketch of my own. Alcohol induces dilatation of the capillaries of various regions of the body, but especially of those of the head, with great precision and certainty. And perhaps it may even be said that it causes dilatation of the capillaries throughout the body. If now there be already present a strong tendency to the formation of pus, it may be materially favoured by the administration of alcohol. We may perhaps be allowed to attribute the injurious effects which now and again have been observed to follow the employment of alcohol to these actions. Alcohol holds a secondary position as an antipyretic as compared with quinine, because the latter does not possess these disadvantages.

It remains for us still to consider to what causes we are to attribute the refrigerating influence of alcohol, and there appear to be three possibilities:—that it may operate upon the nervous system; that it may act on the means which the system possesses of regulating its temperature by the perspiration; or, lastly, that it may exert its influence directly on the oxidizing processes which take place in the juices. After all that has been said upon the subject, it is the last action which seems to be by far the most probable.—*Practitioner, Sept.*, 1869, *p.* 137.

128.—ON SOME OF THE ADVANTAGES OF TAPPING IN THE TREATMENT OF OVARIAN TUMOURS.

By George Southam, Esq., Surgeon to the Manchester Royal Infirmary.

[Considering the high rate of mortality still attending the operation of ovariotomy, and the fact that the disease rarely destroys life for several years, a grave responsibility attaches to the surgeon who recommends ovariotomy, so long as more simple means will keep the growth of the tumour in check, and the patient's general health unimpaired. Among these means, tapping appears to be the chief remedy.]

Medical literature supplies us with a few instances where tapping has sometimes arrested the disease for so long a time that it has almost been regarded in the light of a cure. Three examples, at least, of this kind have come under my own notice; and my experience leads me to think that in cases judiciously selected, the operation, if carefully performed, may be more frequently successful than is generally supposed.

In 1843, Mrs. G., of Salford, consulted me respecting the propriety of the extirpation of a tumour, from which she had been suffering about three years. She was then 33 years of age, married, and had four children, the youngest two years old. In company with the late Mr. Thomas Slack, her surgeon, I made a careful examination. We found her abdomen much distended, the swelling caused apparently by fluid. As the patient was in a feeble state of health, we decided upon tapping, and drew off twenty quarts of a clear fluid of low specific gravity. The operation was followed by some constitutional disturbance, but in three weeks she seemed to have completely recovered. About twelve months afterwards, the abdominal swelling returned, and at the end of two years from the former operation the distension was so large that we had again recourse to the tapping, and removed twenty-two quarts of fluid. Her recovery was most favourable. At the end of a fortnight she was able to resume her domestic duties, and remained in a satisfactory state of health, until 1864, a period of nineteen years. Since that time, however, the swelling has gradually returned, but so slowly as to occasion little or no inconvenience, until the last few months; and though the abdomen is considerably enlarged, she feels at present no necessity for operative interference. She is now in her sixtieth year, and to all appearance in better health than when she first consulted me twenty-six years ago.

In 1843, I was requested by Dr. G. C. Watson, of Chester, to visit with him Miss S., aged 25, residing in Liverpool, who was suffering from an ovarian tumour, the removal of which, two gentlemen, who had made this disease a speciality, had recommended. A careful examination convinced us that the tumour was a unilocular cyst, and, as the patient appeared in good health, we advised tapping. The operation was performed by Dr. Watson with a medium-sized trocar, and between five and six quarts of a semi-transparent viscid fluid removed. The patient's recovery was rapid and complete; and, at the end of five years, when I last heard of her, there had been no return of the disease; and Dr. Watson informs me that from that time he has had no reason to suppose that she has not remained perfectly well.

In July, 1867, Miss M., aged 25, asked my advice respecting an ovarian tumour that had been developing itself about three years, and which she had been urged to have removed. It appeared to consist mainly of fluid contained in a single cyst, and her health was not in the least impaired. I therefore recommended her to be tapped. Six quarts of clear, viscid fluid were removed. She speedily recovered, and, on a careful examination made only a short time ago, I could detect no return of the swelling.

Such favourable results as the above are only to be expected when the disease consists of one or perhaps two cysts; but as a fair proportion of ovarian tumours assume this character, the possibility of recovery after tapping ought not to be overlooked in their treatment. It must, however, be admitted that the beneficial effects of the operation are frequently only temporary, and therefore it ought not to be undertaken if likely to hinder the successful performance of ovariotomy.

Fortunately, this evil result is not often to be apprehended; on the contrary one or two tappings, especially when the cyst has obtained a considerable size are usually succeeded by a marked improvement in the patient's health, and by a reduction of the original tumour, so that only a moderate incision through the abdominal parietes will be necessary for its extraction: both of which conditions are favourable to the success of the major operation.

Amongst the cases of ovariotomy that have come under my notice, several have been those of patients in comparatively good health, where the tumours were of recent formation, of moderate size, and free from adhesions, and the operation itself, therefore, of the simplest description; but the results have not been so satisfactory as in cases of longer standing, and of more complicated character,—acute peritonitis being usually the cause of death in the former, shock and its consequences in the latter. The tendency of the peritoneum, therefore, to inflammatory action seems to diminish with the duration of the disease, probably on account of the continued friction of this membrane against the surface of the cyst diminishing its sensitiveness.

Accordingly, in the earlier stages of the disease, whether the tumour consisted of single or of multilocular cysts, it has for some time been my custom to advise a postponement of ovariotomy; tapping the tumour once or twice when it has become inconveniently large. Since adopting this plan, I have removed seven diseased ovaries, and in only one case was the operation fatal. Five of the patients had been tapped once, one twice, and one three times, the fatal case being among the first five. The recovery of those tapped only once was the most rapid, although in three of them the tumours were multilocular cysts. The two tapped more than once made favourable progress; but their complete restoration was not accomplished for several weeks, owing probably to the fluid in the cysts having become purulent after the second operation in one, and after the third in the other. Suppuration of the cyst I have not unfrequently found to be the consequence of repeated tappings; and, therefore, it is a matter of doubt whether the operation should be undertaken more than once or twice, as its repetition may diminish the chance of successful ovariotomy. The experience of Mr. Spencer Wells is also favourable to a preliminary tapping, for he found that, whilst the average mortality in 135 cases, where the patients had never been tapped, was 27·40 per cent., where the patients had been tapped once mortality was only 25·64 per cent. (Proceedings of the Royal Medical and Chirurgical Society, 1869.)

It is scarcely necessary to dwell on the advantages of tapping in clearing up any doubtful points in the diagnosis of abdominal tumours; for no one, I think, would resort to extirpation in such cases until he had first ascertained the nature and connexions of the disease, for which purpose tapping has not unfrequently been found most useful.

In offering these remarks on the tapping of ovarian cysts, I must not omit to notice the mode of performing the operation, especially as, when ovariotomy was in its infancy, I first called attention to the dangers which attended its performance (London Medical Gazette, 1843.)

It was then the custom to use a full-sized trocar; the patient was seated on a chair, and, to ensure the complete expulsion of the contents of the cyst, the abdomen was compressed with towels by the operator's assistants. Additional force was also often applied by pressing the abdomen with the hands, whereby considerable violence was sometimes inflicted on the peritoneum and the contents of the abdomen, which, with the frequent entrance of air through the trocar into the cyst, often led either to inflammation of its walls or of the peritoneum.

The present mode of operation is comparatively free from these dangers. The patient is allowed to recline in bed or on a couch. A small-sized trocar with a stop-cock is employed, to which is attached a long piece of elastic tubing for conveying the fluid to a utensil placed near the patient, which tubing, when used on the principle of the syphon, as recommended by my colleague, Dr. Roberts, excludes all air from the cyst. The fluid, by this means, is removed very slowly, and thus faintness is prevented, whilst the gradual contraction of the cyst and abdominal parietes renders it unnecessary either to press the abdomen with bandages or with the hands, and the risk of peritoneal inflammation is lessened. By attending to these precautions, tapping, which was formerly often accompanied with considerable danger, has become one of the simplest and safest operations in surgery.—*Lancet*, *Oct.* 30, 1869, *p.* 605.

129.—ON THE CURE OF PHYMOSIS BY "SUDDEN DILATATION.'

By Dr. Francis R. Cruise, one of the Surgeons to the Mater Misericordiæ Hospital, Dublin.

I wish briefly to advocate the cure of phymosis by "sudden dilatation." This treatment appears to me so efficient, safe, and ready, that I consider it quite a boon, especially as phymosis is a condition at once common and objectionable. The success of this method depends on the circumstance that the contraction is usually situated *in the mucous membrane of the prepuce, just at its junction with the skin.* Accordingly, when we open this contracted point forcibly, the mucous membrane *tears up*, while the skin expands with the utmost facility.

The operation may be performed with a common dressing forceps, but I prefer one specially designed for the purpose.

[The instrument used by Dr. Cruise is like an ordinary dressing forceps with the extremities of the blades bent on the flat at right angles to the rest of the instrument. To regulate the extent of dilatation there is a little arc in the handles, cut with a screw thread, and carrying a movable nut which can be adjusted to the requirements of the case. This instrument is made by Messrs. O'Neil and Thompson, of Dublin.]

Before the operation it is desirable to calculate the amount of dilatation required, and to adjust the dilator accordingly. I do so on this plan:—I cast a loop of thread loosely round the penis at its thickest point, namely, at the corona glandis; now using the loop as a measure, I arrange the nut upon the arc, so that when the handles of the forceps are closed its jaws separate enough to make this loop tense.

Now I proceed to operate as follows:—I commence by seeking out the preputial orifice, exactly where the skin and mucous membrane unite; into it I insert the closed jaws of the forceps, taking care not to pass it into the urethra; now I close the handles suddenly and firmly. The mucous membrane tears up in the line of the axis of the penis, and immediately the foreskin may be retracted completely.

The pain endured is sharp but transient, and I have never seen bleeding or other trouble follow. The only dressing needed is a strip of lint, moistened with water or other lotion, which should be wrapped round the part so as to retain the foreskin retracted and cover the wound. After a few days nothing is required, and in all suitable cases, operated on with due care, the result has been perfect.

It is just a year since I adopted this method of treating phymosis, and I have the experience of about a dozen cases. I operated on some of these in the Mater Misericordiæ Hospital, and on others in private practice. In the latter instances I experienced special comfort, no chloroform being needed, and the operation being performed in my study. The method has been tested by my friends, Dr. Robert Macdonnell, Dr. Stokes, junior, Dr. Tyrrell, and Dr. Henry Curran, and has given entire satisfaction. Our joint experience has led to certain conclusions, which I will now state.

1st. This method of treatment is best suited to cases of simple uncomplicated phymosis, and is not so successful where there is induration or matting of the parts from inflammation.

2nd. It is requisite to dilate *fully*, otherwise the result will be only partially successful. I learned this by the result of some of my earlier cases.

3rd. It is advisable after the operation to keep the foreskin retracted for twenty-four or forty-eight hours, as neglect of this precaution may lead to failure.

It is not difficult to understand the reason. When the prepuce is forcibly dilated, the mucous membrane tears in the direction of the axis of the penis, and if it heals up in this posture very little is gained. On the other hand, when the foreskin is retracted the rent becomes transverse, and if the parts are so retained until some adhesion takes place between the skin and mucous membrane, then subsequent contraction, affecting only the length of the line of rent, is inconsiderable. I have satisfied myself of this mechanism of the operation by experiments on the dead body, Dr. Robert St. John Mayne having kindly sought out for me a subject presenting the condition of phymosis.

In conclusion, I beg to say that the idea of sudden dilatation as a cure of phymosis is not original with me. I saw the late Dr. Hutton use a dressing forceps for this purpose fifteen years ago, and the French surgeons have lately resorted to it.—*Dublin Quarterly Journal, Nov.*, 1869, *p.* 482.

130.—HERNIA KNIFE: CONSTRUCTED TO PREVENT THE BLADE BEING OVERLAPPED BY THE BOWEL DURING HERNIOTOMY.

By B. Wills Richardson, Esq., Examiner to Royal College of Surgeons, and Surgeon to the Adelaide Hospital, Dublin.

Every practical surgeon must be aware how liable a protruded portion of bowel is to be cut, should it overlap the edge of the knife in the ordinary operation for the relief of a strangulated intestinal hernia; one of the accidents for the avoidance of which the knife of Sir Astley Cooper and some other hernia knives were designed.

The instrument introduced here to the notice of the surgeon has been planned for the purpose of preventing the bowel overlapping the blade; and may be passed to the seat of stricture without the finger as a guide, more space being thereby reserved for our sight during a very critical stage of the operation.

I am aware of Le Dran's knife having a provision for the attainment of the same object, in the two wings that project from its back.

This can be equally well attained by the more simple plan of attaching a broad back to the blade. In my knife the broad back is secured to the blade by a rivet at the anterior end, and a screw posteriorly. It projects $\frac{2}{10}$ths of an inch beyond the end of the blade; and laterally, about $\frac{2}{10}$ths of an inch in the broadest part. It tapers towards, and terminates near, the handle.

The blade for $\frac{5}{8}$ths of an inch from the anterior end has a cutting edge which terminates a little behind its greatest convexity. From this point to the handle the edge is blunt, and does not cut. The most convex portion of the cutting part of the blade is $\frac{3}{8}$ths of an inch in depth.

With this knife, unless in very awkward hands, a cutting accident to a protruded bowel is hardly possible; and it is so shaped and sized that it can be carried in the ordinary surgical pocket-case.—*Dublin Quarterly Journal, Nov.*, 1869, *p.* 465.

131.—TUBULAR PRESSE-ARTÈRE FOR THE IMMEDIATE COMPRESSION OF ARTERIES.

By B. Wills Richardson, Esq., Surgeon to the Adelaide Hospital, Dublin.

In the year 1793 Deschamps invented an instrument for the immediate compression of arteries, which is so arranged that the artery can be compressed directly against a horizontal bar by the tightening of a ligature, the ends of which are brought through passages in the bar, and secured at the median slit in the top of the vertical stem of the instrument. Many surgeons, Sédillot truly remarks, have imitated Deschamps and described nearly similar compressors, which, we are told, by the same surgeon likewise, have been abandoned. Their discontinuance has been attributed by him to their liability to excite irritation in wounds, that may lead to ulcerous inflammation of the arter .

To me this does not appear extraordinary, considering the large size of several of those immediate compressors, and the additional danger incidental to the use of some of them—that of Deschamps, for example. Let us assume that it has been applied to an artery situated at some depth from the surface; there is nothing to prevent either inflammatory exudation or soft tissues from entering the spaces between the vertical stem and the ligature, that may lead to such difficulty in its removal, great mischief may ensue. Moreover, the length of the horizontal bar, with the ligature stretched between its ends and the slit, separate structures from the compressed vessel, which it is of great consequence should be in contact with it.

Possibly the little instrument I am about to describe will be as short-lived as those just mentioned, yet, being when in use free from risk, except the risk common to all immediate compressors for arteries, it may meet with some favour.

Whether or not acupressure even, is destined to supplant the ligature, time alone will decide. However, he must be very prejudiced indeed, who will not admit that the ligature acts often as a seton, maintains suppuration, and thus prolongs the chances of blood-poisoning, provided, as so many believe, that pus in contact with raw surfaces has great influence in the development of this unhappy sequela.

The action of the ligature as a seton was exemplified in Robert S., in whom a ligature did not separate from its vessel until the lapse of several days after the femoral artery ligature had been removed; during which time pus drained constantly from its track; and it appeared on one occasion to have been the cause of phlegmonoid suppuration.

The tubular *presse-artère*, being suitable only for the immediate compression of vessels, has not so wide a range of usefulness as acupressure. But it appears to me to have a very decided advantage, especially when applied to a large vessel, inasmuch as it can be used so as not to compress any structure excepting the vessel.

Being completely under the control of the surgeon, compression by its means can be graduated to a nicety, and it can be removed from a vessel with great facility.

Before describing the *presse-artère* I should mention that I borrowed the idea of it from one of the instruments in use for the extraction of small calculi from either the urethra or bladder.

Description of the Tubular Presse-artère.—It is composed of:—1. Either a fine silver or German-silver tube, to the upper end of which a small milled button is soldered. The button facilitates the turning or screwing of the tube by the fingers of the surgeon. A female screw is formed upon the upper half of the inside of the tube. 2. A steel stem, having two jaws at its lower end. The jaws are perfectly smooth both on their opposed and on their outer surfaces, and have no cutting edge. They are so arranged as to allow of their opening and closing parallel to each other. At the upper end of the stem there is a handle-nut, hexagonal only in shape, but for recognition in wounds the handle-nut of the *presse-artère* for large arteries should have some other form when more than one instrument is in use. The nut is fitted to the stem by means of a square mortice, that it may not turn on the stem during either screwing or unscrewing of the tube, and is secured in its place by a smaller, also a screw, nut. The upper half of the stem has a male screw cut upon it, for adaptation with the female screw of the inside of the tube. It is not essential that the tube should have the female screw, for it may be made to slide only, being pushed home by the playing of a separate screw-nut between it and the larger handle-nut. There is less chance, however, of unnecessary disturbance of the vessel during removal of the *presse-artère*, if the tube screws upon the stem, whereby a steady and an even motion is secured, so essential for the safe working of the instrument.

The length of the *presse artère* should be regulated by the size of the limb, the vessels of which it is intended to compress.

In the case of James B., after I had placed a *presse-artère* on each of the vessels, I imitated, to a certain extent, the method of acupressure by the twist, *presse-artères* having been substituted for the needles. Thus, the *presse-artères*, with their vessels, were semi-rotated, a moderate amount of torsion being thereby insured. Not being satisfied, however, that any benefit results from the manœuvre, I have not repeated the twist in any subsequent operation.

The following advantages may be claimed for the tubular *presse-artère* over other instruments for the immediate compression of arteries :—

1. The smallness of the space it occupies in comparison with that required for Deschamps and for some other *presse-artères*.

2. Facility of application and of removal without the risk of unnecessarily disturbing the vessel.

3. Accurate graduation of the compression by means of the *fine* screw arrangement, which likewise prevents the jaws of the instrument springing suddenly off the vessel during the unscrewing for its withdrawal.

Through an unintentional oversight in my original description of the *presse-artère*, in the Medical Times and Gazette, no allusion is made to the forceps for the compression of arteries, described by Mr. Nunneley. (See *Retrospect*, vol. lvi., p. 177.)

Mr. Nunneley's forceps, however, being spring-forceps, I do not regret having published the account of the tubular *presse-artère*, believing, for the reasons just mentioned, that a *presse-artère*, having the jaws under such command as the screw affords, can be worked with facility and safety.—*Dublin Quarterly Journal*, *Nov.*, 1869, *p.* 458.

132.—THE TREATMENT, OF CLUB-FOOT BY DIRECT EXTENSION.

By Jolliffe Tufnell, Esq., Surgeon to the City of Dublin Hospital, Examiner to the Royal College of Surgeons, Ireland.

A writer upon orthopedic surgery remarks that "the practitioner, in the exercise of this art, should be, as far as possible, independent of extrinsic aid." The means which I am about to advocate duly fulfil this end.

In the treatment of talipes the main point to be attended to is the drawing down and fixing of the heel.

The shoes of Scarpa, the foot-splints of Stromeyer, and all the complicated apparatuses which from time to time have been introduced, as possessing peculiar advantages, have each had, as the object in view, the acquirement of a point *d'appui* or fixed centre from which the removal of the deformity might be commenced, and the restitution of the foot to its normal position begun.

It matters not as to whether the tendons implicated in each special instance be or be not divided (so far as instrumental aid is concerned), for the ultimate object to be attained is the same in either case, viz.: the removal of the distortion; and the simpler the method by which this can be effected the better.

I have in the course of practice used many of the various instruments made and sold for this purpose, and with each and all I have found the same objection to exist, namely: that the heel, especially in a very young patient, soon becomes retracted, and the foot to a great degree misplaced; and that instead of occupying the position into which it has been carefully and apparently effectually placed a few hours before, it is, when examined, found to be shifted and changed, the toes only continuing to be confined to the foot-board of the splint.

This practical defect led me to employ for the drawing down and fixing of the heel the simple mode of extension by adhesive plaster, first (I believe) suggested by Dr. Crosby, of the United States, and since generally adopted in cases of fracture of the thigh.

Its superiority over any other mode of treatment that I have seen employed in club-foot is such as to induce me to bring it before the notice of the readers of this Journal, believing that it may be of use to many, especially in provincial practice, and establish that the employment of elaborate and complicated instruments may in nearly every instance be avoided.

I am myself an advocate for tenotomy in talipes, in its various forms, and for the full division of all the tendons engaged; but whether tenotomy be resorted to or not, the after-treatment in restoring the foot by mechanical means remains the same; and this is the point to which I wish to call attention, and the extreme efficiency with which the majority of cases can be treated by means of a simple iron splint, aided by Crosby's sticking plaster straps.

Two broad straps of adhesive plaster must be fixed one on either side from the knee to the maleoli, and hanging free for twelve inches below, these straps being confined in their places and prevented from slipping when drawn upon by two or three circular straps encompassing the leg, but at the same time avoiding all constriction of the limb.

Soap plaster is preferable to the ordinary sticking or resin plaster in this respect, that it is less irritating to the skin, and less likely to excoriate—a point of the utmost importance, especially in the newly-born child; and the treatment here recommended can hardly be begun too soon.

The sticking plaster being thus applied to the patient's limb, the heel drawn down thereby, must be firmly fixed to the foot-piece of the common iron foot-splint with its requisite slits in the foot-piece—the posterior for the heel, the middle and anterior for the straps that pass over the tarsal and metatarsal bones. By merely knotting the ends of the plaster after being brought through the posterior slits over an ordinary bottle-cork, flattened upon one side, the anterior portion of the foot being spread out and confined in position, as the progress of the case will permit, due care being taken in every instance not to employ any great degree of force, but simply, as it were, to coax down the distorted foot into its natural shape and position, as for progression in after life.—*Dublin Quarterly Journal*, *Nov.*, 1869, *p.* 496.

138.—ON THE TREATMENT AND CURE OF VARICOCELE BY SUSPENSION OF THE TESTIS.

By John Morgan, Esq., Surgeon to Mercer's and the Westmoreland Lock Hospital, Dublin.

The treatment of varicocele and the many inconveniences accompanying it has always received much attention from the surgeon. Owing to the nature of the configuration of the parts concerned, the difficulty of making pressure, or of influencing the condition of the vessels, perfect and manageable palliative treatment is difficult of application. The contraction of the scrotum by the use of the flexible ring, or by the method of removing a portion of it, has not been found as successful as might have been anticipated, while the application of pressure by means of a truss is often extremely inconvenient and unbearable, though occasionally, after many months' use, eventually producing a cure. No doubt the chief cause of non-success in these cases was allowing the dependent condition of the testis to continue, and the anatomical arrangement of the vessels to remain unchanged. With a view to effect not only great palliation of the symptoms, but also to obtain a gradual and permanent cure, I have found a plan of suspending the testis the most efficacious and endurable. The vertical direction of the current of blood, specially on the left side, proves the great difficulty to be contended with, and the support of a contracted scrotum, or of a suspensory bandage, will, of course, not influence this, while the pressure of a truss, though retarding the blood current, does not give any immediate support to the testis itself, and the wearing of it is often extremely irksome and painful.

The plan of suspension I propose in the first place supports equally the testis and the distended veins, acting as an elastic stocking does to the leg, and then allows an easy suspension of the organ. It brings the veins into an inverted position, and directly relieves them from over-distension, and the blood current is more materially and effectually regulated by doubling the vessels as it were round the inguinal ring. The testis is placed in the "suspender," which consists of a piece of web about 3½ inches wide at one end, 4½ inches long, 4 inches wide at the other, and cut, gradually tapering to the narrower end. A piece of thick lead wire is stitched in the rim of the smaller end, and the sides are furnished with neat hooks, a lace, and a good tongue of chamois leather, two tapes being sewn along the entire length of the web, which are afterwards attached to the suspending belt. The application is easily made by the patient in the morning before rising, and when the parts are relaxed, laying the affected organ, while in the dependent position, in the "suspender," and lacing up the hooks with a moderate degree of tightness, then raising it up and attaching the tapes to the suspending belt previous to rising from bed.

The size of the "suspender" must, of course, vary more or less, but the measurements named will suit an ordinary case; the lead wire encircling the lower end gives a foundation to the general means of support, and keeps the testis within the suspending bag, the patient can mould it more or less to his convenience. Of course, as in every appliance of the kind, a certain amount of discretion must be used as to wearing of the suspender for the first few days; it should not be kept on constantly; the parts should be sponged night and morning with cold water or a cold lotion, used so as to fortify the skin, as any chafing must be avoided—in all cases the suspender is best omitted at night. So great is the convenience afforded that the gentleman from whose case the illustration is taken is now shooting in Scotland, able to enjoy himself and go through a day's hard walking without inconvenience, the suspension of the testis affording him such relief.

An hospital case treated during the summer also shows the great adaptability of this method—the patient being a railway porter, and in the habit of carrying heavy weights, yet he is able, by aid of the suspender, to pursue his business without inconvenience. In another instance of a groom, in the habit of riding, a similar relief was speedily obtained.

In cases of specific orchitis I have also found the suspender give immediate relief, the testis being first wrapped round with lint steeped in tinct. opii—the bag is gently and neatly applied, and then raised by means of the straps; after one hour or so it may be a little more raised, till finally it is vertical. The relief from pain in most cases is immediate, and the compression is equable, the weight of the testis is taken off by the "suspending" sac, which should always be made of web or some open-worked material to allow of coolness and prevent any unnecessary irritation or chafing of the skin.—*Dublin Quarterly Journal, Nov.*, 1869, *p.* 490.

124.—OBSERVATIONS ON SOME POINTS CONCERNING THE REDUCTION OF DISLOCATIONS.

By Dr. FRANCIS R. CRUISE, one of the Surgeons to the Mater Misericordiæ Hospital, Dublin.

In the year 1861, I published in the Dublin Hospital Gazette, some observations on the reduction of dislocations, together with the description of a new extending apparatus. In that paper I entered at some length into the description of various appliances which have been used for the purpose, estimating, to the best of my ability, the value of each. Subsequent experience has confirmed me in the views then put forward, and which I will now briefly recapitulate.

Making due allowance for the large number of cases in which reduction is facilitated by chloroform and "manipulation," it remains beyond question, that a certain proportion cannot be managed without forcible extension. The question then arises: How can forcible extension best be made? I think I have demonstrated in the paper referred to that it can best be accomplished by means of an endless screw windlass. The tractive force thus obtained possesses the requisite qualities. It is *powerful*, so as to overcome the resistance of opposing muscles; it is *gradual*, and thus wearies out these muscles rather than violently counteracts them; it is *easy of application*, does not embarrass or fatigue the operator, and is *constant and unvarying*, except at *his will.*

The instrument which I described and illustrated in my paper possessed all the desired qualifications, and gave the utmost satisfaction in operation; nevertheless, it was open to a serious practical objection, namely, being made in wrought metal, it was very expensive. This circumstance debarred it from general use. I have since spent some time endeavouring to mend this fault, and I trust I have succeeded. The windlass which I now wish to introduce to the notice of the profession is as efficient and manageable as the original one; but, being manufactured from carefully made models in malleable cast-iron, it can be purchased at a small price.

I am much indebted to Mr. James Kennan, of the firm of Kennan and Sons, Fishamble-street, Dublin, for the pains he has taken in carrying out my designs, and for the valuable practical hints he has given me.

The instrument is now to be had from Messrs. Fannin and Co., 41, Grafton-street, in this city.

It consists of a drum upon which a rope is gradually wound up. The hook at the free extremity of this rope is attached to the gear wherewith the limb is grasped, and the windlass is secured to some fixed point by the loop. The drum is rotated by the revolution of an endless screw, acting upon cogs cut on its edge, the screw being moved by a handle. According as the rope is shortened so is extension made, and with such power that with one hand a force of two hundred weight can easily be applied. To facilitate adjustment of the length of the rope to the requirements of each case, the endless screw can be shifted from contact with the edge of the drum, and the latter, being then free, can be wound or unwound without delay. The moment force is required the screw may be shifted back to place.

I have frequently used this windlass myself at the Mater Misericordiæ Hospital, and am satisfied of its efficiency. Lately, it has been tested by Dr. Robert Macdonnell, at Steevens' Hospital, and by Dr. Robert P. White and Dr. Corley, at Jervis-street Hospital, and has given entire satisfaction.

In all instances, I use the dynamometer, which I recommended in 1861. Independent of the security it affords against the application of excessive force, it encourages the operator *slowly to tire out* the opposing muscles with the *minimum of traction.* I was not aware, in 1861, of the extent to which this economy of force may be carried out, but since then I have thoroughly realised it. I think I may safely say, that, by allowing proper time for the muscles to yield, any moderately recent luxation, uncomplicated by organised adhesions, may be reduced with one-half the force formerly used. Some years ago, I often applied over 150lbs. pressure; but, latterly, I rarely exceed 60lbs. I need not observe how much risk of damage to the tissues is thus avoided.

I will quote two cases in illustration:—

Case 1.—I happened to be in the Mater Misericordiæ Hospital in the middle of the day, January 8th, 1867. when a very powerfully built young man came in with a recent subcoracoid luxation of the right shoulder. The patient was too muscular to justify expectation of reduction by simple manual effort; therefore I placed him on his back, on a mattress laid on the floor of the hospital theatre, and made extension with the windlass in the direction of the spine of the scapula. When the dynamometer indicated 60lbs., I delayed, sustaining that pressure for ten minutes. At the end of this time finding that the head of the bone had cleared the edge of the glenoid cavity, I suddenly released the extension, and placing my heel in the axilla, carried the arm across the chest. The head of the bone at once slipped into place, with an audible snap.

Case 2. Patrick Flanagan, aged 38, entered the Mater Misericordiæ Hospital under my care, February 27th, 1867, with subcoracoid luxation of the right humerus. The accident had occurred the previous evening from a fall on the shoulder. The man had endured great pain all night, and was still in much suffering. Placing him similarly to the last patient I applied extension in like fashion. After twenty minutes, the dynamometer indicating only 30lbs., the head of the bone slipped into place.

Before *concluding, I may just* mention a few contrivances which I have found serviceable, under trying circumstances, in the reduction of luxations.

I may observe, in the first place. that in the majority of instances, the recumbent position is the best for the patient, and I prefer laying him on a mattress on the floor. In certain cases of dislocations of the elbow it is better to place him sitting on a chair.

Next, it is often difficult, unless in an hospital theatre, to find available fixed points to which extending and counter-extending apparatus may be attached. It is rare, however, not to find substantial wood-work, and a screw-ring which can be easily driven into it is invaluable. The screw is so sharp that it will penetrate any wood work, and once inserted, it resists any amount of traction.

For a counter extending band, I think a rolled sheet equal to any, and always at hand.

The mode of grasping the limb is a very important point. For myself I prefer the worsted skein, put on in single or double clove-hitch, the part being protected by a wrapping of moist chamois leather.—*Dublin Quarterly Journal, Nov.*, 1869, *p.* 485.

135.—THE TREATMENT OF NÆVUS.

By Henry Bateman, Esq.,

I am desirous of calling attention to a mode of treating nævus which I have now successfully adopted for about fifteen years. It consists in the application of a tartarised antimony plaster to the surface of the tumour, and allowing it to remain until pustules resembling small-pox are produced, and sometimes still larger. The plaster I have used is ordinarily made by having one part of antim. tartarizatum mixed with two parts of melted empl. resinæ, and then spread upon thin leather or linen. It ought to cover the entire nævus completely, but need not extend beyond it. If it be detached from any cause before it has produced a sufficient amount of inflammation and pustulation it should be renewed immediately. If there be too much inflammation, poultices and fomentations of warm water may be applied. Should the skin be unusually insusceptible, or nævus unusually thick, equal parts of tartarised antimony and resin plaster may be used.

With comparatively thin nævi the former strength is amply sufficient, and sometimes a single plaster will produce inflammation and pustulation enough to effect a cure. Should the nævus be thicker than usual the stronger plaster may be used, and it may be repeated again and again until the nævus sloughs.

My neighbour, Dr. Glover, has seen many of these cases of nævi with me. Amongst others a child named Alice Charlotte H., who had twenty-five nævi on various parts of the head, trunk, and extremities, all of which were cured by the use of emp. antimonii tartarizati.—*Lancet, Nov.* 6, 1869, *p.* 660.

136.—CURIOUS EXIT FOR A PIN, WHICH WAS SWALLOWED FOURTEEN MONTHS PREVIOUSLY—RECOVERY.

By Dr. Francis McEvoy, Balbriggan, Ireland.

An extern patient was brought to the dispensary by his mother, who informed me that her son was about 13 years of age, that he lately complained very much of a pain in his stomach which made him cry, and it usually attacked him when he bent forward with his chest against the table, as in writing and learning his lessons. At such times he suffered from a shooting pain, as if something suddenly darted into his stomach. His appetite was excellent, he slept well, and enjoyed good health in every other respect, was cheerful and lively, but latterly seemed unwilling to play with other boys as he used to, and said that he was afraid of their hurting his stomach. At first his mother was inclined to attribute it to worms, as he had passed some at various times, and had even thrown up one or two by mouth. Then to his having taken a dislike to school and study; that idea was untenable, as he evinced the greatest anxiety about learning. I examined him carefully, and questioned him closely as to feeling and health; he complained of but one thing, a pricking sensation when he bent forward against anything. Upon the closest examination I could detect nothing to account for the feeling he had. I therefore looked upon it as one of those obstinate cases of worms which are sometimes met with, and will baffle the most skilful to cause their expulsion. I gave him some pulv. santonine, with various other vermifuges, and although he expelled half a dozen large worms, yet he obtained no alleviation of the symptoms complained of.

Having tried various remedies without effect, I recommended his mother to try further advice, or get him into hospital, which she did. In about six months afterwards she came to me again, having in the meantime brought him to various medical men, and having had him in two hospitals without deriving any benefit; but, on the contrary, he evidently became worse,—to request that I should go and see her son, as he was getting a lump like a boil just over his stomach where he formerly had the pain, which was gone since the lump had made its appearance. I was very much surprised to see him reduced in so short a time from a fine, plump, healthy looking boy, to a mere skeleton—so emaciated had be become that I did not know him.

On examining the lump it proved to be a small abscess fully developed. His mother informed me that about three weeks ago, he began to complain of his trowsers hurting him, and that on examination, she found a fulness and a circumscribed hardness, which day by day became red and soft, and so sore that he was obliged to take to his bed altogether for the last fortnight.

I at once opened it, and, whilst doing so, became aware that the point of the lancet came in contact with a hard substance. I immediately, before the matter was all discharged, passed a bulb-pointed silver probe into the abscess, and struck something that grated against the instrument. By working it backward and forward, I managed to get the point towards the opening, seized it with the forceps, and extracted a pin the cause of all his ills. About fourteen months previously he swallowed a pin, which he recollected the moment he saw it. He recovered rapidly and in a very few weeks regained his former health, strength and spirits. He has since emigrated to America. I was one day paying him a visit, and asked him how he happened to swallow the pin. He told me that one day coming from school, he picked up that very pin, and put it into his mouth. Another boy tripped up his heels, and he got rather a severe fall. He could not at the time say whether it fell out of his mouth or not, but did not recollect having swallowed it.—*Medical Press and Circular*, *Aug.* 4, 1869, *p.* 97.

137.—EXIT OF A PIN SWALLOWED FIVE YEARS BEFORE.

By Alexander Chain, Esq., Liverpool.

On the 4th of June I was requested by Mr. W. to see his daughter, a fine healthy looking girl, aged fourteen years. On inquiry I ascertained that for some eight or ten days previous to my visit she had suffered considerable pain in consequence of the formation of an abscess on her back, situated a little above and internal to the inferior angle of the right scapula. When I saw her the pain had almost subsided; fluctuation was readily detected, but there was no appearance of pointing. A sharp-pointed bistoury was pushed into the softest part, and about an ounce of healthy pus escaped.

On sponging the part before applying a poultice, I discovered a foreign body lying obliquely across the aperture. I seized it with a pair of forceps, and, to my astonishment, extracted a pin. The mother, who was standing close by, on seeing this instantly exclaimed, "Doctor, that's the pin she swallowed five years ago." This is another instance of a foreign body, without producing the slightest inconvenience, remaining in the system for years before making its way to the surface—*Medical Press and Circular*, Aug. 4, 1869, p. 97.

138.—PLAIN RULES FOR THE RESTORATION OF PERSONS APPARENTLY DEAD FROM DROWNING.

By Professor B. Howard, New York.

Rule 1.—Unless in danger of freezing, never move the patient from the spot where first rescued, nor allow bystanders to screen off the fresh air, but *instantly* wipe clean the mouth and nostrils, rip and remove all clothing to a little below the waist, rapidly rub dry the exposed part, and give two quick, smarting slaps on the stomach with your open hand. If this does not succeed immediately, proceed according to the following rules to perform artificial breathing. Rule 2.—Turn the patient on his face, a large bundle of tightly rolled clothing being placed beneath his stomach, and press heavily over it upon the spine for half a minute. Rule 3.—Turn the patient quickly again on his back, the roll of clothing being so placed beneath it as to make the short ribs bulge prominently forward and raise them a little higher than the level of the mouth. Let some bystander hold the tip of the tongue out of one corner of the mouth with a dry handkerchief, and hold both hands of the patient together, the arms being stretched forcibly back above the head. Rule 4.—Kneel astride the patient's hips, and with your hands resting on his stomach, spread out your fingers so that you can grasp the waist about the short ribs. Now throw all your weight steadily forward upon your hands, while you at the same time squeeze the ribs deeply, as if you wished to force everything in the chest upwards out of the mouth. Continue this while you can slowly count—one, two, three; then *suddenly* let go, with a final push, which springs you back to your first kneeling position. Remain erect upon your knees while you can count—one, two; then throw your weight forward again as before, repeating the entire motions—at first about four or five times a minute, increasing the rate gradually to about fifteen times a minute, and continuing with the same regularity of time and motion as is observed in the natural breathing which you are imitating. Rule 5.—Continue this treatment, though apparently unsuccessful, for two hours, until the patient begins to breathe; and for a while after this help him by well-timed pressure to deepen his first gasps into full, deep breaths; while the friction of the limbs, which should if possible have been kept up during the entire process, is now further increased. Rule 6.—After-treatment—externally. As soon as the breathing has become perfectly natural, strip the patient rapidly and completely. Enwrap him in blankets only. Put him in bed in a room comfortably warm, but with a free circulation of fresh air, and except for the administration of internal treatment, let him have perfect rest. Internally: Give a little hot brandy and water, or other stimulant at hand, every ten or fifteen minutes for the first hour, and as often thereafter as may seem expedient. We must refer the reader for other particulars to the pamphlet.—*Med. Times and Gazette, Sept.* 18, 1869, *p.* 369.

139.—ON A NEW SYSTEM OF ABSCESS DRAINAGE BY SPIRAL WIRE TUBES.

By Robert Ellis, Esq., Obstetric Surgeon to the Chelsea, Brompton, and Belgrave Dispensaries.

It is about eight years since a lady applied for relief for great pain and tenderness over the pubes and the hypogastrium generally. Her febrile condition, loaded tongue, and cachectic aspect led me to suspect, in connection with these symptoms, the existence of some collection of pus in or near the uterus; and on vaginal examination, I found this organ distended with fluid, and the cervix absolutely impervious. Fixing the cervix, I passed a long trocar throughout its length, and gave exit to nearly half a pint of horribly fetid pus. But since this condition of things could not be allowed to repeat itself, it then occurred to me that if I could devise some very flexible tube the sides of which could not be compressed so as to make it impervious, and if it could be retained in the cervical canal, good service would be thereby rendered. My first attempt was with tubes of caoutchouc; but these were quite useless, for the least angular bend stopped them up, and their elastic walls yielded at once to a very slight pressure from without. I then tried a tube made of soft tinfoil; but in the tubular form this metal became quite rigid, and, if bent, the tubes were as apt to become closed up as the others. The idea then occurred to me to make a tube of very fine hard brass wire, by coiling it regularly and evenly over a fine steel rod. The tube was readily made, and its success was perfect. It was elastic in the highest degree; it could even be tied into a knot without destroying its patulousness; its flexibility would follow the wanderings of any sinus, however crooked; and its sides, being slightly open, permitted the secretions of the cavity it penetrated, and the canal in which it lay, readily to pass through. I procured several of these, of different lengths and sizes, and, fitting one of them to the artificial canal made in the cervix uteri, I had the satisfaction of seeing it day by day drain the diseased uterine cavity of its pus; and in a very little time the patient made an excellent recovery, and has since continued perfectly well.

The success of this system of drainage led me to apply the same tubes to a variety of other cases; and I hope shortly to publish some account of their remarkable value, especially in cases of dysmenorrhœa arising from mechanical obstruction of the cervical canal. I have also successfully used them, in some displacements of the uterus, for rectifying the bent state of the cervix which frequently accompanies these malpositions; and in a very opposite class of cases to those of the dysmenorrhœal type—viz., the menorrhagic,—in which they have done valuable service in affording a safe and certain outlet for intrauterine injections. It is to the approval of Mr. Paget of the application of these tubes to the drainage of deep chronic abscesses generally that the idea of submitting them to the readers of the Lancet is chiefly due.

These tubes, as I have mentioned, consist simply of a closely wound coil of wire, resembling exactly the springs used by dentists for supporting artificial teeth, or those used by bell-hangers to preserve the due tension of their wires. They are simply spiral springs made of brass or copper wire, of different degrees of tenuity and elasticity. In obstetrical practice I employ only the very fine hard brass wire, the finest I can procure; and I find this makes the best tubes for my special purposes. But for ordinary abscesses in other regions of the body very fine copper wire may be used; it is softer, and exerts very little strain on the tender structures through which it has to pass. It is also finer than the other, and thus can be adapted to long, narrow sinuses, to every bend of which the tube will easily accommodate itself. It is a mere superstition that the copper or the brass do any mischief as metallic substances to the canal in which they lie, or constitutionally. I have used hundreds of these tubes without the smallest evidence of harm due to the metals of which they are composed. But, if it be thought desirable, they may be electro-gilded in a few minutes by plunging them in a hot solution of cyanide of gold, with the aid of a battery and a piece of gold foil.

The manufacture of the tubes is thus managed; and its extreme simplicity ought to enable every surgeon to make them without recourse to the instrument maker. I have always made my own, and thus exactly adapted them to the peculiarities of the individual case. If the surgeon possess a common lathe, they may be made, literally, in a minute. But they can also be made by hand, only they are less even and neat in appearance. I take (for the lathe) a number of common knitting needles of different sizes, cut off the required length, square one end of each after tempering it down in the flame of a candle and "centre" the other. This forms the tool or "maundrill," on which the wire is to be coiled. Being fixed in a chuck at one end, and adapted to the lathe-centre point at the other, it is ready for work. The wire is fastened to a pin in the chuck, and the lathe is put in motion; the slow motion is used. The wire, being firmly held in the hand, is drawn by the revolution *of the axis upon itself*, and thus coils itself automatically, and by a very few revolutions of the wheel the tube is finished. When made "by hand," the steel rod must be firmly fixed at one end in a vice, and the wire then slowly and carefully wound round it to the desired length. Very good tubes can be made in this way, though it is inferior to the other. By a strong pair of scissors or a wire nipper, the tubes can be cut to any size. In order to make them very flexible, it is better to draw them out a little at each end; the spirals are thus slightly separated from each other, and the walls of the tube by this means readily permit the percolation of pus or other fluids to go on through their sides. Care must be taken to bend in slightly the terminal coil of the tube, so that the point of the wire may not catch in the tissues through which it is passed.

Their method of application is as follows:—For the uterine cervical canal it is necessary to fix the cervix by a tenaculum, and gently to pass up the tube mounted on a uterine sound; the free end then lies in the upper part of the vagina. It is useful to slip a morsel of vulcanised tube over this free extremity, so as to prevent it abrading the posterior vaginal wall. For an ordinary abscess they may be introduced on a probe or director, and often without any such assistance, by a spiral, coaxing sort of motion. They are retained easily *in situ* by tying a piece of silk over the free end, and fastening this to the skin by a strip of adhesive plaster. A loose soft pad of cotton wool should then be placed over the tube, and it will be found to do its work with the greatest regularity until the abscess ceases to secrete any more pus.

As in the tracheotomy tubes, it is convenient to have a double tube in many cases, the inner one being a size or two smaller than the outer. This may be withdrawn and cleansed, and then replaced. They will require changing generally about once a fortnight, but I have seen no harm arise from a much longer stay. I do not propose to encumber the pages of the Lancet with a recital of the many cases in which I have found these tubes render invaluable service. I believe the drainage system here introduced to be so simple and practical that no surgeon who once takes to its employment will be disappointed with the results; but if there be any point requiring further explanation, I should be happy to give it to any medical man who may wish for it. The following note of Mr. Paget's will probably induce some of my professional brethren to give this plan of drainage a fair trial.

"Dear Mr. Ellis,—I have now used your spiral wire drainage tubes in cases sufficient to prove to me that they have these following advantages over any other means of drainage that I have yet seen:—

"They can be placed in sinuses of very small diameter, and with equal advantage whether the sinus have one or more openings,

"Their bore is not diminished by bending them to any angle.

"They cannot be flattened or shut up by contraction of the orifice of the sinus.

"They can be inserted with very great facility; and can be worn for any length of time, in fit cases, without causing irritation.

"They are cleanly, and excite no decomposition in pus or other fluids.

"Sincerely yours, James Paget."

It may be convenient that I should add that the tubes may be procured, of various sizes and lengths, from Messrs. Mayer and Meltzer, of Great Portland-street, W.—*Lancet, July* 24, 1869, *p.* 115.

140.—CURE OF SEA-SICKNESS.

Dr. Dwinelle, of New York, publishes an account of a method of treating sea-sickness, which he saw employed, by Dr. Le Coniat, of the French navy, with remarkably successful results.

The skin over the stomach is moistened with a solution of sulphate of atropia, in the proportion of a grain to an ounce of water. A flat disc, *forming the negative* pole of an ordinary volta-electric apparatus, is applied *over the pyloric* end of the stomach. A sponge attached to the positive pole is passed, for three or four minutes, from the cardiac towards the pyloric end, varied by being occasionally passed downwards. The application is not painful, and is generally followed by refreshing sleep.

In a stormy passage from Brest to the United States of America, Dr. Dwinelle, who suffered much from sea-sickness, was treated in this way by Dr. Le Coniat, with great benefit; and in every instance in which he saw the remedy applied great and immediate relief followed, and generally a complete cure.—*New York Med. Journal, Jan.*, 1869, *p.* 390.—*Dublin Quarterly Journal, May*, 1869, *p.* 417.

141.—SWIMMER'S CRAMP.

[When a case of this distressing accident occurs the man suddenly cries out, sinks at once, and is no more seen until his dead body floats ashore some hours afterwards.]

How is this terribly sudden drowning to be explained? The victim is generally said to have been attacked by cramp, and manuals advert to the subject, and direct the swimmer who is so seized, to thrust his leg out violently, and forcibly bend his foot upwards. The explanation seems to be generally accepted, but it does not really explain this awfully mysterious sinking. We do not need to ask a good swimmer whether cramp in the leg, however severe, would cause him to sink suddenly, and without a struggle, in the sea. It is impossible. The human body is specifically lighter than water, and so much lighter than sea-water that no effort is required to preserve it from sinking in that fluid. A swimmer seized with leg cramp would instinctively throw his head as far back as it would go, conscious that he might remain afloat in this position without the need of moving a muscle. The unfortunate swimmer who drowns under these circumstances, always goes down suddenly and without a struggle. This signifies that the body suddenly becomes heavier than water. It can only do that by losing the air which is contained within the cavity of the chest, and the probability seems to be that the cramp which happens is a cramp of the respiratory muscles, by which the expansion of the lungs is prevented or their air forced out. Death would then occur as it often takes place in tetanus. This is a subject which has strangely escaped observation. Inquiry must, of course, be limited, for there is no opportunity of questioning the unfortunate victims; but the testimony of observers, or of those who have themselves experienced any kind of cramp in bathing, might be usefully brought to bear upon it. The feeling of insecurity which these cases occasion to swimmers is terrible. Could we but ascertain the exact circumstances, it is conceivable that some measures might be devised by which their occurrence could be prevented. It must be remembered that swimming implies a very much more violent muscular exercise than is apt to appear. It seems probable—though it is by no means certain—that the muscles of respiration, which are powerfully employed in swimming, may occasionally be seized with cramp as a result of unusual exertion, with the effect we have described of causing compression of the chest. If such be the case, it is tolerably certain that regular and graduated gymnastic exercise would be the surest safeguard against an affection of muscles arising from their being suddenly called upon to perform unusual exertion of severe character.—*Lancet, Sept.* 4, 1869, *p.* 349.

142.—THE WIMBLEDON CAMP AND THE EARTH-CLOSET SYSTEM.

By JOHN WYATT, Esq., Surgeon-Major, Coldstream Guards; and Surgeon to the National Rifle Association.

The best method of deodorising and disinfecting the excreta of such an encampment as that of Wimbledon has formed the subject of several communications which have lately appeared in the Lancet, and particularly with reference to the efficiency of the dry-earth conservancy, all of which I have had the advantage of carefully perusing and reflecting on; for the whole question involves a very anxious consideration for myself, as the responsible medical officer of the National Rifle Association. Last year was the first on which the Council determined to adopt Moule's system of earth-closets, and, with the exception of two days, nothing could have been more efficient than the working of them, although, on account of the unprecedented amount of diarrhœa, they were in unusual demand. It has been attempted to be proved by one writer that the dry earth is not a disinfectant, though it may be a deodoriser; and the comparison of the rattlesnake without the warning of the rattle being none the less a venomous reptile, has been quoted to prove that deodorisation of dry earth does not necessarily imply neutralisation of the pernicious products. No doubt an open enemy is more desirable than a concealed one; but perhaps, after perusing the report on the dry-earth conservancy system in the Madras Presidency, a more favourable notion will be entertained of its applicability, especially for encampments, barracks, gaols, &c., where many people are congregated in a more or less confined space. I have always been strongly of opinion that if the dry-earth system be *efficiently* worked, it is capable of proving both a deodoriser and a disinfectant of human excreta.

Let us compare results, and especially a little in detail, by the light of the Indian Report recently received. In the Madras Presidency the application of the dry-earth system extended over a period of four years. It was proved that pure clay possesses large deodorizing powers, seven pounds being equal to seventeen pounds of the best earth found near Madras, and that two pounds were capable of absorbing one pound of water or urine; and the conditions necessary for the efficient working of the system were dryness, immediate application, and sufficiency in quantity. There was a difficulty about the urinals, owing to the enormous quantity of earth necessary to be employed for complete deodorization; and in wet weather means must be resorted to for drying the earth.

The essential condition of success in the Madras report is stated to be, that the earth should be as dry as possible, and that it should be stored in a roofed building to prevent the contact of rain; that all ordure should be completely deodorized before it is buried, when it can no longer undergo putrefactive fermentation, or disengage any of those noxious gases which are perceptible to the senses and injurious to the health of those exposed to their influence. The objection to the earth system is represented to be—the great cost of procuring earth for daily use, and of its removal, while, on the score of economy, that by sewers is preferable; but when a good system of drainage and water supply are deficient, the system of dry-earth sewage is doubtless the best means available for thorough amalgamation with the excreta. It is well known that if the acidity of the urine can be maintained, decomposition will not result, and as M'Dougall's disinfecting powder contains carbolic acid, in association with sulphurous acid, lime, and magnesia, the results are very favourable; but the coal-tar acids have higher disinfecting powers. Chloride of lime, one of the strongest of the class of deodorisers, reacts only on the gases of existing putrefaction, but has no influence on the future. Carbolic acid has scarcely any action on fetid gases, but it attacks the cause which produces them, and at the same time combines with the organic matter in such a way that it never reacquires its tendency to putrefy; it acts by destroying vitality, and the use of it tends to remove the objection to the deposit of sewage in pits, not only by arresting decomposition, and rendering it incapable of taking on any further action of that nature, but by admitting of its immediate disposal on grass land, soldiers' quarters, or farm lands. It is undoubted that earth and feculent matter may be kept in a dry state for long periods without putrefactive changes setting in; but if water gains access to it decomposition occurs. Buried in pits, and covered over, it is free from smell at the expiration of six months; and it may be considered as certain that dry earth has the power to render decomposition in excrementitious matters dormant, and to keep latrines and urinals inodorous. But certain conditions are necessary for its effectual action, these being, as before stated—1, dryness; 2, application in sufficient quantity; 3, immediate application; 4, reduction to powder, 5, selection of a suitable earth.

The quantity necessary to deodorise the daily evacuations of a healthy adult is about two pounds and a half, and about six pounds and three quarters for the daily urinary excreta, assuming it to be about thirty ounces in the twenty-four hours; but coal-tar should always be applied to the utensils used. This large quantity of earth for the deodorisation of urinals must always impose a great difficulty to its application, therefore it is recommended that they should be treated by M'Dougall's disinfecting powder only. It is calculated that the cost of latrines alone, without urinals, is about £300 per annum for a regiment of 1000 men, and if employed for urinals it would be £120 more. When the excreta are buried in the earth, the mass is liable to give out offensive vapours in damp weather, and when a small quantity of the deodorised and buried excreta is taken up, and diffused in water, it is found to teem with various forms of organic life—the forms which some writers have included amongst the causes of Asiatic cholera.

Earth is the great assimilator and neutraliser of all decaying organised matter: it incorporates the organic elements with itself, and renders them useful for the nourishment of living vegetation. It is through the medium of the earth that the entire cycle of life and decay is completed. Such are the most important points extracted from the Madras report, which well deserves a careful perusal by all sanitarians.

The difficulties of attempting any other than the dry-earth conservancy system at Wimbledon with any hope of success would be chiefly the very limited space available, and the want of a suitable position for receiving any water-sewage which might be established to bear off the excreta. No doubt that last year the arrangements for carrying out the earth-closet system were not quite so perfect occasionally as could be wished, which will be rectified this year. I have ventured to advise that besides the precautions to secure absolute dryness of the earth used, and frequent application of it, it should also be mixed with a proportion of freshly burnt lime, about one part to four of earth, from which mixture I am induced to anticipate a more perfect sanitary result. I also intend to recommend that M'Dougall's powder should be employed for the use of the urinals.—*Lancet, July* 3, 1869, *p.* 7.

143.—ON IRITIS.

By J. Soelberg Wells, Esq., Professor of Ophthalmology in King's College, Ophthalmic Surgeon to King's College Hospital, and Assistant-Surgeon to the London Ophthalmic Hospital.

Although we may distinguish four different forms of iritis—namely, the simple, the serous, the parenchymatous, and the syphilitic,—there are certain symptoms more or less common to all of them. Thus, there is generally some conjunctival and subconjunctival injection, the latter giving rise to the rosy zone of small parallel vessels round the cornea. The eyelids are perhaps swollen, red, and puffy: and there may be a considerable amount of serous chemosis surrounding the cornea. The degree of photophobia and lachrymation is very variable. The same is the case with the pain, which, especially at the outset, may be but slight, but is more frequently severe, assuming a sharp lancinating character, being situated deep in the eye, and extending thence to the forehead and side of the nose (ciliary neuralgia); indeed there is often great neuralgia of the branches of the fifth nerve. In pure, uncomplicated iritis, the eyeball is but slightly sensitive to the touch; hence, if sharp pain is caused when the ciliary region is pressed by the tip of the finger, it is always a sign of the coexistence of inflammation of the ciliary body (cyclitis). The iris is somewhat dull, lack-lustre, and discoloured, which is partly due to hyperæmia and partly to an effusion into its structure; on account of this effusion and the hypertrophy of the connective tissue, the fibrillæ of the iris are also indistinct and blurred. The pupil is generally sluggish and contracted. Its edge is perhaps irregular, and tied down by small beads of lymph to the anterior capsule, these adhesions being termed "posterior synechiæ." They may exist only at *certain points*, or may occupy the whole circumference of the pupil, leaving its area clear. This is called "annular," or "circular" synechia, or "exclusion" of the pupil. Generally, however, there is some lymph effused into the area of the pupil: this may be only a thin film; or a thick, firm nodule may completely block up the pupil, when it is termed "occlusion" of the pupil. But the effusion is not always confined to the area and margin of the pupil, but may extend back along the posterior surface of the iris, gluing this firmly to the capsule. It is important to remember this fact in performing iridectomy for iritis or irido-choroiditis. The lymph may also occupy the surface of the iris, covering it like a thin film, or appearing in the form of small nodules or buttons: it often mixes with the aqueous humour, rendering this turbid; or it sinks down to the bottom of the anterior chamber as an hypopyon; or, again, it may become precipitated on the posterior surface of the cornea, and give rise to small punctated opacities. The sight is more or less impaired, which may be due to cloudiness of the cornea, of the aqueous humour, or of the area of the pupil. But if it is greatly deteriorated and these parts are tolerably clear, we must suspect the co-existence of an inflammation of the ciliary body or choroid, accompanied by opacity of the vitreous humour, &c. In pure iritis the eye-tension and the field of vision are normal, although the latter may be perhaps somewhat contracted on account of the smallness of the pupil and the synechiæ.

The first patient, B. W., aged 34, presents in his left eye the symptoms of *simple recurrent iritis.* The inflammatory symptoms are but very slight; the lids are normal, there is but a faint conjunctival and subconjunctival injection, but very little photophobia, and no pain or lachrymation. He reads No. 1 of Jaeger. On close inspection, we notice that the iris is slightly discoloured, and the pupil partially occupied by a thin film of lymph; but, on the application of atropine, it dilates very irregularly, and several firm and tolerably broad synechiæ spring into view. The eye-tension and the field of vision are perfectly normal. He had an attack of iritis in this eye in 1863; but was quite free from it till about a fortnight ago, when he caught cold, and the present inflammation supervened. The treatment indicated is the instillation of a strong solution of atropine, in the hopes of tearing through some of the adhesions; but if considerable synechiæ remain, and the disease shows a disposition to recur, I should strongly advise iridectomy.

Serous iritis is chiefly distinguished by the tendency to hypersecretion of the aqueous humour and the deposition of particles of lymph on the posterior surface of the cornea, perhaps in a circular group opposite the pupil or in the form of a pyramid, the base being formed by the larger nodules, which gravitate downwards. The aqueous humour is generally somewhat turbid, this varying often considerably in the course of a few hours. The posterior synechiæ are, as a rule, but few in number, and not very firm or broad. The anterior chamber is increased in depth, and the pupil is often somewhat dilated, which is due to an increase in the intraocular tension. The degree of the latter should, therefore, be frequently examined; for this serous inflammation shows a tendency to extend to the ciliary body and choroid, which is accompanied by hypersecretion and cloudiness of the vitreous humour, increase in the eye-tension, great diminution of sight, and contraction of the visual field. The symptoms of serous irido-choroiditis are well shown in the next patient.

H. D., aged 15. His eyes have been affected for some months; and you observe in both that the anterior chamber is rather deep, the aqueous humour somewhat clouded, and numerous punctated opacities are strewn over the posterior surface of the cornea, and arranged somewhat pyramidally. A few posterior synechiæ existed in the right eye, but they have yielded to atropine; and this pupil is circular. In the left eye some synechiæ are still remaining. So far the disease shows only the symptoms of serous iritis; but, on further examination, we find that the vitreous humour is somewhat hazy, showing both floating and fixed opacities. At one time these were very considerable, and caused great impairment of vision; but the vitreous has lately cleared very much, and the sight has improved correspondingly. Although the eye-tension has been somewhat increased, especially in the left eye, this was not *considerable; and* as the deterioration of sight corresponded to the cloudiness of the media, and the visual field remained good, there was no call for operative interference. The sight is now so good that he can read (with the aid of a convex lens to neutralise the effect of the atropine) words of No. 1 with the left eye, and of No. 2 with the right. The boy is delicate, and somewhat strumous; but there is no trace of hereditary syphilis. The treatment has consisted in the continued use of atropine, an occasional blister behind the ears, and the adminstration of quinine and steel, together with a generous diet.

Parenchymatous or suppurative iritis is principally characterised by a plastic exudation into the parenchyma of the iris, as well as at the edge of the pupil and in its area. The fibrillæ of the iris become much thickened and swollen, its anterior surface hazy and indistinct, which is due to the effusion of lymph, which may appear only as a thin veil or assume a more purulent character, little yellow nodules (which must not, however, be mistaken for syphilitic buttons) being strewn about on the surface of the iris. The aqueous humour becomes turbid from the admixture of lymph and pus, which may sink down and produce hypopyon. The posterior synechiæ are broad and firm, and the pupil is often blocked up by a thick nodule of lymph. From the great impediment in the circulation of the iris, numerous dilated veins may be observed on its surface. Suppurative iritis is not unfrequently accompanied by a similar inflammation of the ciliary body and choroid.

Syphilitic iritis generally assumes a suppurative character, and is, moreover, specially characterised by two peculiarities—viz., the often somewhat partial character of the inflammation, and the appearance of tuberculous nodules or condylomata (gummy tubercles of Virchow) scattered about singly over a part or the whole of the iris. They are embedded deeply in the parenchyma, being developed from the connective tissue. As they increase in size, they push aside the fibrillæ, and sprout further and further into the anterior chamber. Although the presence of the tubercles may be taken as a sure indication of the syphilitic origin of the iritis, you must remember that iritis due to syphilis very frequently does not assume this character, but appears in the simple or parenchymatous form. This has occurred in the third patient, in whom the iritis, which was due to syphilis, showed itself only as a tolerably mild form of parenchymatous iritis.

Amongst the various causes of iritis must be especially mentioned rheumatism; exposure to cold winds, damp, &c.; syphilis; and wounds and injuries of the eye. Traumatic iritis often assumes the parenchymatous or suppurative form, and occasionally the serous. Iritis may also supervene secondarily upon an inflammation of other tissues of the eye.

With regard to the treatment, I would strongly insist upon the extreme importance of widely dilating the pupil by atropine as soon as possible. Thus the chief danger—the formation of thick, firm, posterior synechiæ—is obviated; for these synechiæ are the most fruitful source of obstinate recurrent iritis, and are often also the cause of the extension of the inflammation to the ciliary body and choroid. Moreover, the dilatation affords rest to the inflamed muscular tissue of the iris; the tension and congestion of the eye are diminished, and the ciliary neuralgia relieved. In a healthy eye an extremely weak solution of atropine will suffice to produce wide dilatation; but in iritis a strong solution (four grains to the ounce) is necessary; for on account of the inflammatory swelling of the tissue of the iris, and of the effusion of lymph amongst its fibrillæ, great resistance is offered to the action of the atropine. I generally direct the patient to apply the strong solution at an interval of five minutes for half an hour at a time, to be repeated two or three times daily, until wide dilatation is obtained, or the effect is negative. But sometimes no effect is produced until the inflammatory irritation and the eye-tension have been relieved by leeches or paracentesis. If the pupil is tied down by firm, unyielding synechiæ, atropine should be only used in moderation, for the purpose of soothing the eye. Should it subsequently cause irritation or conjunctivitis, a mild astringent or belladonna collyrium (extract of belladonna, half a drachm, to two ounces of distilled water) should be substituted. *If the ciliary* neuralgia is severe, leeches should be applied to the temple, and hot poppy or laudanum fomentations to the eye; and if the pain does not yield, a subcutaneous injection of morphia should be administered. Mercury need only be given if there is a very considerable exudation of lymph at the edge of the pupil, on the surface of the iris, or into the anterior chamber; or if there is a syphilitic taint, and the disease assumes a specific character. I prefer innunction to the administration of mercury by the mouth, and generally prescribe from half a drachm to a drachm of the mercurial ointment, to be rubbed in two or three times daily. The constant application of hot-water compresses to the eye often causes rapid absorption of the tubercles in the iris and of an hypopyon; but as they have to be continued without intermission day and night, few patients can or will submit to the trouble and inconvenience. In obstinate syphilitic iritis great benefit is also experienced from the administration of large doses of iodide of potassium. If the hypopyon is considerable, paracentesis must be performed, and if necessary repeated perhaps several times. But if the iritis is very severe and obstinate, resisting all remedies, more especially if there are firm and extensive synechiæ, if the pupil is occluded, or the tension markedly increased, it is best to perform iridectomy at once, for this often affords the most striking benefit. In serous iritis the free action of the skin and kidneys should be maintained, and atropine should be applied, together with a suppurating blister behind the ear. If symptoms of a glaucomatous nature suppervene, paracentesis may be tried; but if it does not suffice, no time must be lost in performing iridectomy. In rheumatic iritis, the administration of the oil of turpentine, as first recommended by Dr. Carmichael, often proves very efficacious, although it is apt to produce derangement of the stomach.—*Lancet, Sept.* 18, 1869, *p.* 399.

144.—CASES ILLUSTRATING THE EMPLOYMENT OF CHLORAL HYDRATE IN THE TREATMENT OF DELIRIUM TREMENS.

Under the care of J. H. BARNES, Esq., at the Liverpool Work-house Hospital.

In considering the history of these ten cases, it will be at once evident that chloral, like most other remedies, varies very considerably in its action with various constitutions. While in one case thirty grains were sufficient to compose and give a night's sleep to a most excited and sleepless patient, in another case seventy grains produced no effect, while in yet another ninety grains procured a sleep of only two hours' duration. In all the cases where it was effectual in its operation, sleep was produced very rapidly, ranging from a period of fifteen minutes to two hours. In none of the cases were there that perfect composure and firmness of muscle noticeable after the sleep produced by half-ounce doses of the tincture of digitalis. In most of the cases slight congestion of the eye and face, and slight perspiration, were visible; while there was an absence of any disturbance at all attributable to the drug. Ten to twenty grain doses have been advocated as sufficient for delirium tremens cases, but from his own experience Mr. Barnes is disposed to consider sixty grains the minimum dose, and that any sleep that may have occurred after the smaller doses must have been simply that which so frequently comes to the relief of this class of patients *without* the aid of medicaments.

In this remedy, though we have not an altogether perfectly reliable agent, we have one, as far as experience points, capable of procuring, in *most* cases, a very *rapid* and *peaceful* state of sleep, and capable of administration without trouble or danger in exact definite quantities.

Case 1. J. F., aged 47, was found in the rigging of a ship in the Queen's Dock, and was with the greatest difficulty got down. He was excited and raving. On October 22nd, at 2.10 p.m., seventy grains of chloral were given, but produced not the slightest effect. Being still violent and noisy on the 23rd, he was given four drachms of tincture of digitalis at 12 p.m.; fell asleep in half an hour, and slept more or less the whole night. On awaking he was *quiet and rational.*

Case.—2 J. B., aged 28, a barman, said to have been drinking heavily, was admitted Oct. 22nd in an excited condition; would not keep in bed. He was given, at 2 p.m., sixty grains of chloral. Slept at 9 a.m. on the 23rd, and was quiet till noon. Another sixty grains of chloral were given at 3 p.m. Patient fell asleep at 3.15, and awoke at 4.45. He was quiet all night. On examination next morning there were evidences of typhus, and the patient was sent to the Fever Hospital.

Case 3.—J. J., aged 39, was excited and restless; would not keep in bed, being under the impression that people were going to injure him; tremulous and weak. On October 23rd, at 2.10 p.m., he was given sixty grains of chloral; was slightly affected, but did not sleep. At 8 p.m., sixty grains more were given; he then fell asleep at 8.35, and slept till 6 the following morning; awoke rather excited, but slept again till 9 a.m., when he awoke rational and quiet.

Case 4.—R. B., aged 40, admitted in an excited state, it taking five persons to control him, as he was not only violent, but very large and muscular. On Oct. 31st he was given sixty grains of chloral at 1.40 p.m.; he fell asleep at 2, and slept till 4, when he awoke excited. He vomited the first thing the next morning, and once afterwards. On the 2nd November, at 2.15, ninety grains of chloral were administered, which caused him to sleep in fifteen minutes, the last sleep lasting two hours, and being followed by another shorter sleep. While asleep, his breathing was as placid as an infant's; the eyelids could be raised with the finger, and the pupils were seen to be contracted; on placing the finger between the lids there was spasmodic contraction. Face flushed.

Case 5.—W. J., aged 37, was admitted, and during the whole of the first night would not keep in bed, but was greatly excited, On November 7th, he was given eighty grains of chloral. Patient went to sleep in fifteen minutes, and slept all night. On the 8th he was quiet and rational.

Case 6.—M. M., aged 38, admitted to the asylum on September 28th, 1869, for third attack of delirium tremens within a short time. Patient was pale, restless, and excited, did not sleep the whole night, or keep his bed: tremulous, with a pulse 130 per minute. On the 29th he was given thirty grains of chloral in half an ounce of water. He had a quiet night, and was rational and composed next day.

Case 7.—T. K., aged 30, was sleepless and very excited, with a pulse at 136. Kept making efforts to escape, under the delusion that people were trying to injure him. On September 30th he was given twenty-five grains of chloral, which produced no effect. On October 1st, forty grains more were administered, which quickly induced sleep, lasting the night through. After the dose, the patient's face was flushed, and the body moist. There was no sickness, and on awaking he had acquired calmness and consciousness, but was slightly tremulous.

Case 8.—M. G., aged 24, admitted October 9th, 1869, in a violent and excited state; would not keep in bed. Forty grains of chloral were administered in water, which rendered the patient quieter, producing a flushed face and perspiration, but no sleep. On the 11th he was given sixty grains of chloral at 2 p.m. He fell asleep at 3 p.m., and awoke at 6 p.m., sleeping again from 2 a.m. to 4 a.m. The face and eyes were congested, and the patient, on awaking, was noisy and excited. On the 12th, sixty grains more of chloral were administered at 12.40 p m., sleep supervening at 2.40 p.m., and lasting some three hours. Patient was still excited and noisy on awaking, but gradually became quieter, and was discharged well.

Case 9.—E. P., aged 24, was admitted on October 21st, at 6 a.m., in a very excited and restless condition; struggled violently with the attendants, under the impression that they and others were going to kill him. At 1.30 p.m., sixty grains of chloral were given, and he fell asleep at 1.55 p.m.; woke at 3.45 p.m., slept again at 5.10 p.m., and was asleep most of the night. There was slight perspiration and flushing of the eyes and face, but no sickness.

Case 10.—J. M. D., aged 35, was admitted on October 21st, sleepless, excited, and very shaky. At 2 p.m., sixty grains of chloral was given. Sleep commenced at 2.30., and with slight intervals continued all the afternoon and night. On the 27th, not having slept well the previous night, patient took sixty grains of chloral at 8 p.m. He fell asleep at 10 p.m., and awoke at 5 a.m. There was no sickness, flushing of the face, or perspiration.—*Lancet, Nov.* 27, 1869, *p.* 741.

145.—ON TONICS IN THE TREATMENT OF CHRONIC BRONCHITIS AND EMPHYSEMA.

By Dr. John C. Thorowgood, Assistant-Physician to the Hospital for Diseases of the Chest, Victoria Park.

Although there is no lack in our materia medica of medicines reputed excellent for chronic bronchitis, emphysema, and those asthma-like difficulties in the breathing consequent upon these two complaints, still the undoubted fact remains that these chronic lung affections are exceedingly obstinate and hard to cure; they give way perhaps for a time under the influence of some new remedy, but it is only to return again as bad as ever, to the distress of the patient and the disappointment of the doctor.

It is among those who are getting somewhat into years that we find the most numerous and marked examples of chronic bronchitis, with more or less pulmonary emphysema; and these patients, always more or less dyspnœic, are often liable to attacks of difficulty in their breathing, which they call asthma, and which at times—as for instance, after a prolonged burst of coughing—have all the characters of true spasmodic asthma, and are, like it due to a cramp-like closure of the bronchial muscle, resulting from the violent expiratory effort of the cough.

The general and more abiding breath difficulties of these cases of old-standing bronchitic emphysema appear, however, to be rather of a paralytic than of a spasmodic nature, and are due partly to some degree of defective primary innervation through the vagus, but more especially to impaired nutrition of the dilated air-vesicles and loss of contractile force in the bronchial muscle.

The two most common causes of this morbid state of lung are repeated attacks of chronic bronchitis, or inveterate and incurable asthma. Both these affections usually result in emphysema, with thinned and degenerative air-vesicles; and the latter, by the fits of severe spasm to which it so constantly subjects the bronchial muscle, especially tends to exhaust its nervous irritability and greatly to impair its contractile power.

It is when these evil conditions are thus developed that we find the expiration so prolonged and imperfect. It seems as if the sufferers were unable to expire sufficiently to get a proper renewal of the air pent up in their lungs and hence arises much of their discomfort.

In a typical and aggravated case of bronchitic emphysema, resulting from asthma of twenty-five years' standing, the patient remarked to me on the agreeable feeling of relief that followed percussion of the chest, just as if the stagnant air had been thus mechanically forced out of his chest and fresh air enabled to enter in its place.

It is not long since I saw a veteran member of our profession who presented well-marked symptoms of emphysema and chronic bronchitis, and who, alluding to the fits of dyspnœa which for many years had so sorely tried him, said to me, "It is not the getting air *into* my chest, it is getting *out* that I find so difficult."

We know that the morbid anatomy of these cases shows us greatly dilated air-vesicles with very thin walls. In a measure, the degenerating human lung comes to resemble the lung of a reptile; where, as in the turtle, the air cells are very large, and after the lung has been gradually inflated, it is slowly emptied of the air, which issues through the glottis with a prolonged hissing sound characteristic of animals of the reptile class.

The peculiar kind of asthma which has been described by Wunderlich as *gradually increasing* upon the patient for days, till his chest is in a state of extreme distension, with heart and liver pushed downwards into the abdomen, appears to me an example of this same kind of dyspnœa due to loss of contractile power in the pulmonary tissue, and likely to be associated with serious emphysema and degeneration of the walls of the pulmonary vesicles.

It would be foreign to the purpose of this paper to enter more minutely into the morbid anatomy of chronic bronchitis and emphysema, or to go further into the physical signs of these diseases than is necessary for illustrating points in the treatment. I may, however, remind the reader that, under effective treatment, the actual rarefaction and air-distension of the lung-substance can be demonstrably reduced, the morbid clearness on percussion may be lessened, and the quantum of respiration improved. As lung distension diminishes in this way, it has been pointed out by Dr. Walshe how the area of the heart's superficial dulness perceptibly increases; and all this good may be attained by the removal of bronchitis.

Undoubtedly this is very satisfactory, so far as it goes; but, from what I have observed of the progress of these chronic bronchial disorders, I am inclined to think that, in our persistent efforts with various antispasmodics and sedatives to ease the breath and cure the cough, we lose sight of those atrophic and degenerative tissue-changes which underlie the symptoms we treat, and for a time, perhaps, are fortunate enough to cure. In the instances of medical men of years and experience for whom I have had to prescribe, I have been struck to observe how persistently they have been using all manner of expectorants and sedatives, and the distrust they felt of any such tonic as iron, bark, or quinine. Among the ordinary public I have more than once been told by patients who for years had suffered in the way described, that I must not prescribe a tonic, or that iron is sure not to suit them, and yet, so far as I have been able to see from their voluminous prescriptions, I have not found that any tonic has ever been given. What is it that makes these patients so averse to a tonic remedy I have not yet found out, though for years I have been aware of the fact. One patient who was very particular in laying down the law on this subject, owned to deriving more benefit from nux vomica and phosphoric acid than from anything else; and I have learned recently that my old medical friend, to whom I recommended iron with nux vomica is able to speak most favourably of the treatment. These two medicines—iron and nux vomica, or else strychnine in small doses, seem to me specially beneficial where there is constant dyspnœa with prolonged expiration. The presence of expectoration and of occasional fits of severe nocturnal asthma is no drawback to their administration; and not infrequently the nux vomica will relieve these spasmodic attacks most effectually. Another medicine that is of great service, and that appears to promote nutrition, is arsenic. At times this drug will act quite like a specific in improving the breathing, as for example, in the following case:—

Mrs. G——, aged 50, seen July 7th, 1864, at Victoria-park Hospital. She has been three months under medical treatment; but still complains of difficulty in breathing, attacks of asthma at night, much cough, with profuse yellow expectoration. Chest extra resonant, with feeble breathing, and bronchial râles; heart healthy; much sickness at stomach, and vomiting. Ordered two drops of Fowler's solution, in alkaline infusion of calumba, three times daily.

In one week she came to say that cough and spitting had ceased, as had also the sickness; and she was soon well. On May 27th, 1867, I saw her in perfect health.

The quantity of expectorant medicine this patient had taken was remarkable, and I believe it was the stoppage of this that certainly had something to do with the complete cure that resulted. Where iron is employed as a remedy, the tincture appears a good preparation, and will go well with a saline such as the muriate of ammonia; or we may give the sulphate of iron with sulphate of magnesia in mint water. As it is often desirable to maintain the action of the iron in small doses for some time, it is best not to give any form of ether with it, for this will cause dryness of the mouth, and render the patient *averse to the* continuance of the remedy. In the case of a man aged 63, with bronchitic emphysema, and whose father died of asthma, the sulphate of iron given as above soon enabled him to lie down at night, stopped his cough, and in fact cured him, with the sole addition of five grains of compound squill pill every night for a week.—*Lancet, Nov.* 13, 1869, *p.* 668.

146.—CASE OF ILEUS RELIEVED BY INFLATION.

By Dr. George Whyte, Elgin.

The following case of obstruction of the bowels may be of interest as showing the value of "inflation" for the relief of this very fatal disease. The remedy itself is as old as Hippocrates, and very easily administered. I was sent for on November 18th last to see a married woman, of about 40 years of age, who was suffering from obstruction of the bowels. On the 16th she had taken ℥j. magnes. sulph. but without relief. She afterwards had an enema administered by a midwife, but this came away in a short time almost clean. When I saw the patient she was complaining of severe pain over the abdomen, which was swollen and tympanitic. The pain, she said, began below and to the right of the umbilicus some days before she took the "salts." She put her finger at once on this spot, as it was more acutely painful than the rest of the abdomen. She had been vomiting a good deal, the matter brought up being stercoral, and she was still very much nauseated. The tongue was furred, brown, and dry; pulse small and quick; the urine was freely secreted. I ordered at once a large enema to be thrown up slowly. This found a ready passage, but in a very short time came away clean. During the day she got other two, one of which contained croton oil, but neither had any effect in relieving the obstruction. On the contrary, she gradually got worse, the pain greatly increasing and the vomiting becoming incessant and stercoral. One grain of solid opium was ordered every hour till the pain was relieved, and large warm poultices to be constantly applied to the abdomen.

November 19. Feels easier, but is still vomiting stercoral matter. Very weak and anxious-looking; pulse small and quick. Another large enema was given, but without affording the slightest relief. I afterwards introduced a long tube into the rectum as far up as I could, and, having connected it with a small hand bellows, very slowly inflated the bowels, every now and then kneading the abdomen with my hands. The operation caused a good deal of pain, but I continued till the abdomen was quite hard, and the patient began to vomit severely, putting up along with the matters quantities of wind. On removing the tube she expressed herself as being much relieved, and in a very short time she had a free liquid evacuation. The vomiting and pain ceased, and she made a rapid and complete recovery.—*Medical Times and Gazette, Nov.* 27, 1869, *p.* 622.

147.—THE AIR WE BREATHE.

By the Editor of the Medical Times and Gazette.

Under the title "Town Air and Country Air" we had occasion to refer to the fact that the inhabitants of unhealthy towns and the occupants of ill-ventilated dwellings do not suffer from deficiency of oxygen in the air they breathe, or from accumulation of carbonic acid, but from the presence of minute traces of impurities in the atmosphere by which they are surrounded. This fact (a most fundamental one, and although obvious enough to chemists who have turned their attention to the chemistry of the atmosphere) bears an appearance of novelty, and requires to have a little light thrown upon it. Many persons will regard it, at first sight, as opposed to the plainest and most elementary facts of chemical science. After the great discovery towards the end of the last century that the atmosphere consists almost entirely of nitrogen and oxygen gases, and that, by combustion and respiration, oxygen is taken from the air and carbonic acid added to it, nothing could be more natural than to suppose that the atmosphere in favoured localities would be found to be rich in oxygen and comparatively destitute of carbonic acid. Many of the earliest analyses of air taken from different parts of the country were, curiously enough, made by a fallacious process, and did actually lead scientific men to believe in the occurrence of great differences in the constitution of the atmosphere in different localities. The method adopted by Priestley for the analysis of the air was the absorption of the oxygen by means of binoxide of nitrogen and water—a process which is indeed capable of yielding tolerably accurate results when carried out properly, but which is liable to sources of error which were very imperfectly understood in Priestley's time. Accordingly, some 60 years ago it did actually seem to be a fact, vouched for by experiment and theory, that a close and unhealthy atmosphere, such as was often met with, was an atmosphere very deficient in oxygen, and very much contaminated by carbonic acid. Although the experimental bases upon which this conclusion rested have been long ago destroyed, yet, nevertheless, the belief survives even to this day in the form of a popular error, but as an error shared by very many well-informed persons. For many years past it has been universally accepted by chemists as a thoroughly well-established fact that, whether a specimen of air be taken at the top of a high mountain or down in a valley, or whether it be taken from the middle of a continent or from the surface of the sea in the middle of the ocean, there is hardly any variation in the relative quantities of oxygen and nitrogen contained by it. The percentage of carbonic acid occurring naturally in the atmospheric air in these so vastly different localities is also recognised to be never more than a mere trace. All this is at the present day known and admitted by every chemist. But the investigation has been pushed further, and chemists are in possession of experimental data—ample in quantity and of unquestioned authority, although strangely rather lost sight of—proving that in like manner there is no great difference in the relative proportions of oxygen and nitrogen, and that the carbonic acid is never more than a trace in atmospheric air, whether it be taken in the street of a town or in the open country, or whether it be taken from the interior of a crowded theatre, or from an ill-ventilated dwelling, or from out of doors. In order to convey an adequate idea of the constancy of the atmosphere under these conditions, we will cite the published analyses of Dr. Angus Smith, premising merely that they are corroborated by other and independent observers, as, for instance by Dr. Roscoe, who has made examinations of the carbonic acid contained in the air of close places.

The amount of oxygen contained by 100 parts of air obtained from the undermentioned places is as follows:—

From the sea-shore (Scotland) . . .	20·999
„ summit of the hills . . .	20·98
„ suburbs of Manchester (wet weather) .	20·98
do. do. . .	20·96
„ Manchester (fog and mist) . .	20·91
„ sitting-room which felt rather close .	20·89
„ pit of a theatre, 11.30 p.m. . .	20·74
„ gallery of a theatre, 10.30 p.m. . .	20·86
„ backs of houses and closets . .	20·70

The amounts of carbonic acid contained in 100 parts of air were as under:—

From the hills in Scotland . . .	0·0332
„ plain do. . . .	0·0341
„ surface of Thames in London . .	0·0343
„ parks and open places in London . .	0·0301
„ London (average) . . .	0·0341
„ streets of Manchester . . .	0·0403
„ neighbourhood of privies . . .	0·0774
„ worst parts of theatres . . .	0·320

These figures are eloquent. According to them the atmosphere of London does not contain more *carbonic acid* than the atmosphere of the country in

Scotland. Sometimes even the air in the London parks contains a trifle less carbonic acid than the air in Scotland. The air from a Manchester street contains only a trifle more carbonic acid than the air in the country—just about as much more as air in a London park contains less. Even the worst part of the pit of a theatre contains only three parts of carbonic acid in 1000 parts of air. Unless, therefore, carbonic acid be very actively poisonous, we cannot look upon the degree of its accumulation even in the pit of an ill-ventilated theatre as the cause of the closeness of the atmosphere.

Mention has been made of the extreme constancy of the composition of the atmosphere. The air on the open heath or on the seashore contains 20·999 per cent. of oxygen (by volume), the air of a close sitting-room 20·89 per cent., and that of the pit of a crowded theatre 20·70 per cent. of oxygen. In like manner fresh country air contains 0·03 to 0·04 per cent. (by volume) of carbonic acid, and the worst air in a theatre 0·32 per cent. of carbonic acid. The question very naturally arises, how is it that, notwithstanding the consumption of oxygen and production of carbonic acid by the processes of respiration and combustion, there is so very slight a change in the atmosphere of a crowded room? The reply is that the cubic capacity of a room, and consequently the amount of air in it, is very vast in comparison with the actual quantities of oxygen consumed by respiration and by the combustion of the gas used for illumination. If the amount of atmospheric air required to fill any of the theatres be calculated and the quantity of oxygen consumed by the respiration of the audience, using known data for the calculation, it will be found that in three hours there cannot be a consumption of oxygen which is of sufficient magnitude to lower the percentage of that gas in the atmosphere very much below the number actually observed. In making this calculation it may be assumed that there is no ventilation whatsoever, and that the theatre once filled with air remains hermetically closed for the whole three hours. In the actual case, however, the possibility of effecting a change in the composition of the atmosphere of a building is still further diminished by the effect of currents of air and of diffusion.

With regard to the possible physiological effect of lowering the percentage of oxygen from 21·00 to 20·70, and of raising that of carbonic acid to 0·30, there are direct experiments showing that the feeling of closeness is not due to this change in composition. If we do nothing to a specimen of air except withdraw this quantity of oxygen and add 0·30 per cent. of *pure* carbonic acid, the specimen of air will not become close and disagreeable, and may be breathed for a time without any unpleasant sensations. The air to which the workmen in some soda-water works are exposed is often quite fresh and yet highly charged with carbonic acid. It is only when the process of discharging carbonic acid into the atmosphere is also a process for discharging other impurities into it that the peculiar closeness with which all persons are so familiar arises. Although, however, carbonic acid does not occasion the closeness of ill-ventilated rooms, still the experiments of Dr. Angus Smith appear to show that the presence of this gas in abnormal quantities does produce a depressing effect on the human subject, manifesting itself by a diminution of the pulse and an increase in the frequency of the inspirations. To produce these effects it seems to be necessary to have at least 1·00 per cent. of carbonic acid in the air—a proportion much higher than is actually found in close rooms, Although the evils of ill-ventilation arise neither from deficiency of oxygen nor from accumulation of carbonic acid, but from the discharge of some kind of organic matter into the atmosphere, yet a slight deficiency of oxygen and an increase in the carbonic acid of the atmosphere being associated with this organic matter, we may usefully employ these analytical data as signs of the pollution of the atmosphere. Practically, for reasons which will at once suggest themselves to the chemist, little use is to be made of the slight lowering of the oxygen; but we may very advantageously employ the increase in the carbonic acid, which, although a trifling percentage calculated on the air, is a large percentage calculated on the carbonic acid, and which, moreover, may be observed with very great ease and certainty by the employment of the admirable *method introduced* by Dalton, and recently improved by Pettenkofer. We will conclude by citing, from a recent paper of Dr. Angus Smith's, some determinations of the carbonic acid in close atmospheres:—

	Percentage of CO_2 (by volume)
London, Strand Theatre, gallery, 10 p.m.	0·101
„ Surrey „ boxes, 10 p.m.	0·111
„ „ „ „ 12 p.m.	0·218
„ Olympic „ 11.30 p.m.	0·0817
„ „ „ 11.55 p.m.	0·1014
„ Victoria „ boxes, 10 p.m.	0·126
„ Haymarket Theatre, dress circle, 11.30 p.m.	0·0757
„ City of London Theatre, pit, 11.15 p.m.	0·252
Manchester Theatre Royal, gallery, 10.50 p.m.	0·1358
„ Queen's Theatre, pit	0·1026
A factory in Manchester	0·2860
„ „	0·0283
„ „	0·2900
„ „	0·3000

For comparison we append determinations of the carbonic acid in the air which occupies the streets of London and Manchester:—

London, Cheapside	0·0352
„ „	0·0398
„ Newgate-street,	0·0418
„ Oxford-street	0·0344
„ top of Monument	0·0380
„ „ „	0·0405
Manchester, Market-street	0·0374
„ Deansgate	0·0578

Accumulation of carbonic acid is a sign of a close atmosphere, though not the cause of the closeness.—*Med. Times and Gazette, Nov.* 20 *and* 27, 1869, *pp.* 600, 627.

SYNOPSIS,

(ARRANGED ALPHABETICALLY), CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THIS VOLUME, SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE HALF-YEAR.

AFFECTIONS OF THE SYSTEM GENERALLY.

FEVER.—*The Sulphites.*—The sulphites have had a very extensive trial in typhus fever, at the Dundee Fever Hospital. Out of 723 cases treated without sulphites the mortality was 1 in 10·8, and out of 161 cases treated by sulphites the mortality was 1 in 10. So that in actual practice the results are not what might have been expected from the success of Professor Polli's experiments on dogs. A case of typhus fever is not, however, a parallel case to that of an animal with a putrid fluid injected into its veins, for in the former the poison has done a great deal of its work unopposed, whilst in the latter it has, as it were, not obtained a footing in the system, its catalytic action not having become developed. Sulphites are most likely to act in the way expected in cases of purulent infection—or septicæmia. In midwifery practice such cases are common enough. (Dr. J. W. Miller, p. 25.)

INTERMITTENT FEVER.—*Strychnia as a Substitute for Quinine.*—The reputed antiperiodic virtue of quinine is not superior to that of strychnia. About $\frac{1}{40}$ grain strychnia is equal about to three grains of disulphate of quinine. (Mr. W. S. Marsh, p. 238.)

SURGICAL FEVER.—*Chloral.*—The effects of chloral being not only to relieve pain and procure sleep, but also to reduce the temperature of the body, no plan of treatment more suitable in cases of surgical fever can be imagined than the administration of this drug. Under its influence sleep will be induced, pain and excitement relieved, temperature brought down, and undue waste suspended. (Dr. B. W. Richardson, p. 222.)

TEMPERATURE OF THE BODY.—*Effects of Alcohol on.*—After the administration of a dose of alcohol the temperature of the body invariably falls. Hence we need not fear giving it when otherwise necessary, simply on account of the presence of fever, for this latter circumstance is rather favourable than not, as alcohol is shown to be an apyretic. In addition to this lowering of temperature there is, of course, the well-known action upon the pulse and upon the tone and diameter of the vessels, and the stimulant action upon the brain. Whenever alcohol is administered, the strength and also the frequency of the contractions of the heart rise; if, therefore, such an effect is from any cause to be feared, alcohol is obviously an improper remedy to be employed. (Prof. O. Binz, p. 245.)

TYPHUS FEVER.—*Quinine.*—A case occurring in the person of a medical man, showing the occasional influence of quinine in arresting the progress of a case of typhus is given by Dr. Thompson, of Tyrone. The case was about as hopeless as it could be; respiration 48 in the minute, pulse 120, and "as prostrate and powerless as a dead body." In thirty hours after taking sixty grains of quinine, and about a bottle and a half of brandy, the report is, breathing 24; pulse 100; skin cold, and restoration of muscular power. Recovery ensued. (Dr. H. Thompson, p. 21.)

Typhus Fever and Pneumonia.—The diagnosis between these diseases at their commencement is often matter of considerable difficulty. Great reliance may be placed on the temperature. The maximum in pneumonia is always attained before the 6th day, usually on the 3rd or 4th; whereas in typhus the maximum is not usually attained until the 7th day or later. The maximum temperature in pneumonia is usually between 103° and 104° Fahr. (Dr. T. W. Grimshaw, p. 65.)

ZYMOTIC AND OTHER DISEASES.—*The Sulpho-Carbolates*—There can be no doubt as to the action of carbolic acid when applied locally to a wound, but its internal use for the destruction of foreign and noxious germs in the blood, as in zymotic diseases, has not hitherto been practicable on account of the unsuitability of the pure acid for the purpose. The sulpho-carbolates, of which perhaps the best is the sodium salt, can be readily administered, and *in transitu* through the system the carbolic acid is set free and escapes with the breath, and sulphate of sodium passes off by the urine. From experiments made, it is found that half a grain of pure carbolic acid is equivalent to twenty grains of sulpho-carbolate of soda. From twenty to sixty grains of the latter should be given at a dose, dissolved in water. It is not unpleasant in taste, and is readily borne by the stomach. It is particularly useful, of course, in zymotic diseases, as scarlatina, but is of great use in phthisis, in which disease it arrests the night sweats, and checks the fœtor of expectoration. (Dr. E. A. Sansom, p. 30.)

AFFECTIONS OF THE NERVOUS SYSTEM.

CHOREA.—*Strychnia.*—A case is related which occurred at the Middlesex Hospital, in which strychnia was used with considerable advantage. Six minims of liquor strychniæ was given in water every four hours, and two teaspoonfuls of brandy every four hours. Previous to this plan of treatment the case was going on very unsatisfactorily and exhaustion was rapidly coming on. (Dr. Murchison, p. 52.)

DEBILITY AND NERVOUS PROSTRATION.—*Phosphorus.*—Bearing in mind the chemical composition of brain matter (fat, albumen and phosphorus), and the fact that where an unusual amount of wear and tear of the nervous system is being sustained, it is common to find an excess of phosphatic matter excreted in the urine. We have good grounds, independently of experience, in giving phosphorus internally in cases of exhausted nervous power. In a parallel case we give iron in anæmia and chlorosis. A useful preparation of phosphorus is a pill, made by melting finely-divided phosphorus with fat, and then covering the pill with an impermeable coating; $\frac{1}{40}$th of a grain should be given as a dose. The hypophosphites of potash, soda, or lime may be substituted for the pure phosphorus. The hypophosphite of potash has a peculiar resolving and liquefacient action, and cannot be given in cases of tubercular deposit in the lungs, as it causes rapid softening of the tubercle. (Dr. J. C. Thorowgood, p. 236.)

DELIRIUM TREMENS.—There is considerable difference of opinion as to the employment of opium and the administration of stimulants in this disease. Dr. Maclean, at Netley Hospital, gives neither, and trusts to careful nursing and feeding at short intervals with strong beef tea, to which Cayenne pepper has been freely added. Dr. Goodfellow, at Middlesex Hospital, injects morphia subcutaneously, and occasionally allows stimulants. Dr. Salter, at Charing-cross Hospital, gives sedatives freely "aided by stimulants, and above all things *feeding*." The results which he has obtained, have been uniformly such as, in his opinion, leave nothing to be desired. Dr. Peacock, at St. Thomas's Hospital, has been lately employing bromide of ammonium with good results. (p. 53.)

Chloral.—In a case of delirium tremens which seemed progressing very unfavourably, and in which morphia had failed altogether, sleep was procured within five minutes by gr. xxx of hydrate of chloral. The sleep lasted about an hour, and when the patient awoke he was quite composed and rational. (Mr. H. T. Chapman, p. 55.)

EPILEPSY.—The following is Dr. Brown-Sequard's usual prescription for epilepsy: Iodide of *potassium*, one drachm; bromide of potassium, one ounce;

bromide of ammonium, two drachms and a half; bicarbonate of potash, two scruples; infusion of calumba, six fluid ounces. Mix. A teaspoonful of the mixture to be taken before each of the three meals, and three teaspoonfuls at bed-time with a little water. In syphilitic cases he increases the amount of iodide of potassium. (p. 51.)

Assafœtida.—It may be worth while occasionally trying the effect of assafœtida in cases of epilepsy which are not benefitted by bromide of potassium. A case at Charing Cross Hospital is related which, after a duration of ten years, was cured by this drug. Half a drachm of the tincture with three grains of carbonate of ammonia was given three times a day. (Dr. Pollock, p. 51.)

Strychnia.—Just as certain as cases of epilepsy are curable by bromide of potassium, so certain others are curable by strychnia. They are usually, females in whom the disease is liable to commence at or about the period of menstruation as *petit mal*, and are characterised by anæmia and defective nervous control. Large doses are unnecessary; smaller ones are preferable, frequently repeated. (Mr. W. Tyrrell, p. 52.)

HYPOCHONDRIASIS.—In cases of hypochondriasis, with tendency to true melancholia, phosphorus or its compounds are of no service, while from very small doses of strychnine the patient generally obtains most unmistakeable relief. (Dr. J. C. Thorowgood, p. 238.)

LOCOMOTOR ATAXY.—The pathology of locomotor ataxy consists in a grey degeneration and disintegration of the posterior columns of the spinal cord and of the posterior roots of the spinal nerves. It is quite a distinct affection from ordinary cerebral or spinal paralysis. Some affection of vision is often the first symptom, such as strabismus, then lancinating pains in the limbs, and after the lapse of time numbness in the feet and legs, in the hands and arms, or even in the face. Sooner or later the balance of the body cannot be maintained, and the patient totters in walking; then incontinence of urine and loss of sexual power appear, and the case gets gradually worse. The intellect is generally unimpaired, and the general health does not suffer much. The disease is more common in men than women. (Dr. J. L. Clarke, p. 59.)

SWIMMER'S CRAMP.—The sudden manner in which death occurs in cases of swimmer's cramp cannot be accounted for by cramp of the legs. This would not cause the man to sink suddenly and be no more seen. If a good swimmer he would be able to float. The only explanation can be that the muscles of respiration are suddenly seized with cramp, and the expansion of the lungs prevented or their air forced out. Death would then occur as it often takes place in tetanus. (Editor of Lancet, p. 263.)

TETANUS.—*Calabar Bean.*—Out of seventeen cases of tetanus treated with Calabar bean there were only five deaths, a degree of success that has not been shown to follow the employment of any other remedy. (Editor of Dublin Quarterly Journal, p. 49.)

A case of tetanus arising from cold is related, which was treated by subcutaneous injection of Calabar bean. A third of a grain was injected four times the first day with the result of producing only nausea. The same doses next day were followed by nausea, faintness, and perspiration. The drug was then discontinued, an evident impression having been made on the muscles engaged. (Dr. B. Duffy, Florence, p. 47.)

Another case is related in which the powdered bean was given in three grain doses, combined with an equal quantity of powdered rhubarb. As much as 300 grains of the bean were given during the treatment of the case. None of the depressing effects which the bean by itself produces were observed. The case is chiefly interesting, however, from the fact that the bean was discontinued thrice during the progress of the case, and each time with the result of the spasms returning with increased force. (Dr. W. Fenwick, p. 41.)

AFFECTIONS OF THE CIRCULATORY SYSTEM.

Acupressure by means of Small Forceps.—Small forceps bent at nearly a right angle at the point of junction of handle and beak, and of very small size, furnish an excellent method of arresting hemorrhage. The two halves should cross just above the angle so as to furnish a grasping power. These forceps are very suitable also when it is desirable to arrest circulation through an artery in its continuity, as in cases of aneurism; more suitable than the ordinary method of acupressure employed in these cases, as no disturbance whatever of the artery is required, and very little more than a punctured wound is necessary for their introduction. (Dr. J. A. Milne, Aleppo, Syria, p. 120.)

Tubular Presse-Artère as a Substitute for Acupressure.—An excellent form of presse-artère is the following: A fine silver tube containing a steel stem, and moving up or down on the latter by simply twisting a small milled button at the upper end of the tube. The tube contains a female screw fitting to the male screw of the steel stem. The steel stem ends in two smooth jaws, with which the vessel is seized and compressed by a few turns of the screw. (Mr. B. W. Richardson, p. 252.)

Cardiac Murmurs.—Cardiac murmurs are conveyed to the chest walls in two manners—by convection and by conduction. They are conveyed by conduction through solid parts alone, by convection they are carried by currents of fluid in the direction of the flow. It results from this that we may have vibrations of which the blood is the vehicle transmitted either in the one direction or the other, according to which way it is passing through the orifice at the time the murmur is generated. We may have two murmurs, both of them generated at the same orifice, but which though originating at the same point are conveyed to the chest walls in such different directions, that not only do their points of maximum intensity differ, but there is not any one point in the chest where they are both of them audible. It is a mistake to suppose that the apex is the seat of maximum intensity of mitral systolic murmurs. (Dr. H. Salter, p. 60.)

Nævus.—*Injection of Carbolic Acid.*—Large deep-seated nævi may be successfully treated by injecting subcutaneously into them about two minims of pure carbolic acid, and repeating the operation as soon as the inflammation from the first injection has subsided. (Mr. Porter, p. 122.)

Piecemeal Excision of Nævi.—In all cases where it is desirable to save the skin, as in the face, the following operation is the best. Divide the nævus completely in two, and arrest hemorrhage by pressure on the adjacent arterial trunks, or with a director on the skin surrounding. Then with a pair of clawed forceps, and scissors curved on the flat, remove piecemeal all the nævoid tissue, which is very easily distinguished from the healthy parts. The wound can then be closed and dressed. (Mr. F. Jordan, p. 122.)

Superficial Nævi.—Apply a tartarised antimony plaster over the surface of the tumour, allowing it to remain until pustules resembling small-pox are produced. One part of tartarised antimony mixed with emplas. resinæ, and spread on thin leather or linen, suffices for most cases. (Mr. H. Bateman, p. 258.)

Varicose Femoral Aneurism.—If this disease were treated the same as is usually done when it occurs at the bend of the arm, viz., by tying the artery above and below the aneurism and laying open the sac, we run considerable risk by obstructing the circulation in the vein and producing gangrene. The proper plan is to tie the artery above and below the aneurism and close the wound at once, without any other interference. An interesting case of this rare affection is related, illustrative of this plan of treatment. "So soon as the upper ligature was tightened, all pulsation and sound ceased, and the appearance of tumour was almost effaced." (Prof. Spence, p. 109.)

AFFECTIONS OF THE RESPIRATORY SYSTEM.

ASTHMA.—*Belladonna.*—The action of belladonna in asthma is twofold. It acts upon the vessels of the spinal cord, and diminishes its sensibility. Secondly, it acts upon the large pulmonary vessels, causing them to contract, and so stimulating the pulmonary circulation. Belladonna seems to cause contraction of the muscular fibres of all the large arteries, it also produces more rapid action of the heart. (Dr. See, p. 73.)

CHRONIC BRONCHITIS AND EMPHYSEMA.—*Tonics.*—In cases of chronic bronchitis and emphysema, in our persistent efforts with various antispasmodics and sedatives to ease the breath and cure the cough, we are liable to lose sight of those atrophic and degenerative tissue changes which underlie the symptoms we treat. Tonics, however they are feared by patients suffering from these diseases, are of great use, especially iron and nux vomica, or else strychnia in small doses. The presence of expectoration and of occasional fits of severe nocturnal asthma is no drawback to their administration; and not unfrequently the nux vomica will relieve these spasmodic attacks most effectually. Another medicine that is of great service, and that appears to promote nutrition, is arsenic. At times this drug will act quite like a specific in improving the breathing. (Dr. J. C. Thorowgood, p. 270.)

INOCULATION OF TUBERCLE.—If instead of tubercle a piece of caoutchouc, of blotting paper, of healthy tissue, of cancer, or of any other substance, be introduced into the peritoneum of an animal, unmistakeable miliary tubercle will be developed if the animal survive the operation long enough. Now this cannot be from inoculation from the substance introduced. The real effective agent is the dead and degenerated pus which is found in every instance as the result of the reactive inflammation after the introduction of the foreign bodies. The pus in the true foreign body, and its absorption into the economy is the cause of the subsequent pathological changes. (MM. Cohnheim and Fränkel, p. 72.)

PERSISTENT HICCOUGH.—Inject morphia subcutaneously. It will relieve the hiccough instantly. (Dr. J. Constable, p. 68.)

STAPHYLORAPHY.—*Operation for improving the Voice after.*—However successful an operation for closing a fissured palate may be, it is seldom that the voice is free from a very disagreeable nasal twang, owing to the soft palate being merely a tight curtain so placed as to allow air to pass freely into the posterior nares. With a view of remedying this defect, the author lately divided the soft palate on both sides by incisions passing downwards from the hamular processes to the free edge of the palate. The effect was certainly to improve the voice, but it is premature as yet to form a strong opinion as to the ultimate results of the operation. (Mr. F. Mason, p. 123.)

AFFECTIONS OF THE DIGESTIVE SYSTEM.

CEMENT FOR TEETH.—The following is a good cement for teeth: Finely powdered borax, 1 part; freshly calcined oxide of zinc, 9 parts; finely powdered silex, 2 parts; mix well together, and make a firm plastic mass. (p. 245.)

CHOLERA.—*Injection of Morphia.*—Dr. Bates, of Manchester, observes, that whatever the origin of cholera may be, it produces "tonic" spasm of the involuntary, and "clonic" spasm of the voluntary muscles. This suggested to him the subcutaneous injection of morphia in a case fully in the stage of collapse. On returning to see the effect in an hour afterwards he "found the abdomen warm which had previously been cold." He then repeated the injection and in an hour afterwards found reaction becoming established. (p. 27.)

COLIC.—Chloroform given internally, combined with opium, is an excellent and speedy remedy in colic, producing a sense of grateful warmth in the *stomach,* and radiating thence through the whole abdomen, soothing the *painful parts.* From ten to twenty minims is in most cases an effectual dose, combined with one or two drachms of compound tincture of camphor, if the pain be moderate in severity, or ten, twenty, or forty minims of "Battley," or sol. morphiæ mur., if more severe. The opium thus combined will not be found to cause sickness. (Dr. W. Marshall, p. 227.)

DYSPEPSIA.—*Subcutaneous Injection of Morphia.*—The subcutaneous injection of morphia is an excellent, indeed surprising, remedy in cases of dyspepsia, characterised by hyperæsthesia of the mucous membrane of the stomach, with tendency to vomit the food, general irritation of the system, capricious appetite, irregular state of bowels, and disturbed nights. There is usually a coated or too clean tongue, quick pulse, and general debility. A fourth or fifth of a grain of morphia will be found to clean the tongue, restore the appetite, and allay the irritability of stomach. In the forms of dyspepsia often occurring in hysterical women, the morphia syringe, carefully used, is by far the most potent remedy we have. (Dr. T. C. Allbutt, p. 75.)

HEMORRHOIDS.—*Smith's Clamp.*—Mr. Henry Smith recommends that his clamp for the removal of hemorrhoids (described in *Retrospect*, vol. lviii.) be made with the ivory beyond the limits of the clamp, and at the upper extremity, for half an inch. When this is done the actual cautery may be used without the patient being able tell when it is applied. (p. 129.)

HERNIA.—*Chloral.*—Chloral may possibly prove to be of use in cases of strangulated hernia, on account of the complete muscular relaxation produced. (Dr. B. W. Richardson, p. 222.)

Hernia Knife, to prevent the Blade being Overlapped by the Bowel during Herniotomy.—The knife used in herniotomy by having a broad back projecting beyond the end and sides, cannot by any mischance cut a piece of overlapping bowel. It can be used with such confidence that the introduction of the finger at the same time, as a guide, is not necessary. (Mr. B. W. Richardson, p. 252.)

Inguinal Hernia.—Gerdy's Operation.—The simplest operation is that known as Gerdy's. The skin is well invaginated and then fixed by silver wire ligature, one end of which is passed through the outer and one through the inner pillar of the ring. The wires pierce the external skin at different spots. The wires are then drawn tense, and a coil of strapping of the thickness of a No. 12 bougie is attached to either end, and then rolled home. In Wood's operation it is not the skin but the subcutaneous fascia which is invaginated. (Mr. J. D. Hill, p. 127.)

Strangulated Femoral Hernia with Perforation of Bowel.—A case of strangulated hernia is related in which, during the operation, perforation of the gut occurred, owing to its soft and semi-sphacelated state. The aperture being small it was seized by a pair of forceps and tied gently with a ligature. The points of chief interest in the case, however, are two. The ligature was not cut off short, but the end was left hanging out of the wound. Secondly, the sac was fastened by sutures to the edges of the wound. The object of these precautions was that any feculent or purulent discharge might find exit. Feculent discharge actually occurred a few days after the operation. The ligature came away on the fifteenth day. The bowels were not opened for four weeks, and this then occurred spontaneously. (Dr. P. H. Watson, p. 125.)

ILEUS.—Dr. Whyte, of Elgin, reports a case of ileus which he relieved by inflating the bowels with air by means of a long tube and a hand-bellows. The previous use of large enemata had entirely failed. (Dr. G. Whyte, p. 272.)

INTERNAL HYDATID CYSTS.—The persistent internal use of tincture of Kamala poisons, and so cures abdominal hydatid cysts. (Dr. Hjalten, Iceland, Dublin Quarterly Journal, Aug., 1869, p. 52.)

MERCURY, PODOPHYLLINE, AND TARAXACUM.—*The supposed Cholagogue action of.*—The exhaustive and carefully conducted experiments of the Edinburgh Committee of the British Medical Association conclusively show that neither mercury, podophylline, nor taraxacum have any cholagogue action whatever. Mercury given to dogs has no effect on the biliary secretion so long as neither purgation nor impairment of health are produced, but where the health suffers, the amount of bile secreted diminishes considerably. Podophylline was found to diminish the secretion of bile, whether purgation was produced or not. Taraxacum had no effect whatever when given in doses of the extract varying from 60 to 240 grains. (Dr. J. H. Bennett, pp. 231, 238.)

Sea-Sickness.—Moisten the skin of the stomach with a solution of atropia, of the strength of one grain to the ounce of water. A flat disc forming the negative pole of an ordinary volta-electric apparatus, should then be applied over the pyloric end of the stomach. A sponge attached to the positive pole is to be passed, for three or four minutes, from the cardiac towards the pyloric end, varied by being occasionally passed downwards. Great and immediate relief follows, and generally a complete cure. (Drs. Le Coniat and Dwinelle, p. 262.)

Tapeworm.—*Filicic Acid in Pills.*—Although filicic acid is not quite as active as the precipitate thrown down from extract of male fern, previously treated with ammonia by hydrochloric acid, yet when given in the form of pill combined with castor oil, it acts with the greatest certainty. This is to be ascribed, however, only to the purgative action of the oil favouring the deeper penetration of the remedy into the intestinal canal. (Dr. J. Rulle, p. 77.)

Vomiting and Eructations.—*Sulphurous Acid.*—A case of vomiting of nearly all food and constant eructations of frothy and sour clear fluid, was rapidly and permanently cured by the administration of half a drachm of sulphurous acid in one ounce of water three times a day. The case occurred at the Metropolitan Free Hospital. (Dr. C. R. Drysdale, p. 77.)

Ipecacuanha.—Ipecacuanha exerts a power over all diseased mucous membranes in checking profuse secretions. It is especially useful in spasmodic coughs, attended with a profuse mucous expectoration and vomiting. It also has a direct action upon the stomach in cases of obstinate sympathetic retching or vomiting, without primary disease of the stomach. In these cases it must be given in very small doses frequently repeated. (Dr. C. D. Phillips, p. 242.)

Oxalate of Cerium.—The oxalate of cerium in its maximum dose, g. iij., is an excellent sedative in cases of dyspeptic vomiting. (Mr. S. A. Lucas, p. 245.)

AFFECTIONS OF THE URINARY ORGANS.

Albumen in the Urine from Surgical Diseases and Operations.—When the blood is contaminated in consequence of accident or disease, albuminous water may be the result, without any organic disease of the kidney. The albumen in such cases, together with the colouring matter of the blood, may escape in very considerable quantities. These cases must not be confounded with those in which, from some local disease of the kidneys, ureters, or bladder, blood-corpuscles are found in the urine. (Mr. H. Lee, p. 86.)

Chronic Bright's Disease.—*Change of Climate.*—It is found that the mortality from renal disease is infinitely greater in England than in warmer and less changeable climates. In St. Mary's Hospital, London, the proportion of deaths from renal disease to the total number of deaths is as 1 to 31, in the whole of London as 1 to 49, in Paris as 1 to 266, in Bombay as 1 to 2800, in Genoa as 1 to 4808. These facts warrant the expectation, in cases of chronic Bright's diseases occurring in temperate climates, that arrest of the diseases or retardation of their progress, as well as increased and prolonged tolerance of them, may often be effected by a timely change of climate. (Dr. W. H. Dickinson, p. 84.)

Diabetes.—*Opium.*—I know of no medicinal agent that is capable of exerting a controlling influence over the complaint like that exerted by opium. The effect is so striking that there can be no question of its reality. (Dr. F. W. Pavy, p. 85.)

Lithotrity.—*New Lever Lithotrite.*—The author describes a mode of applying lever power to the ordinary screw lithotrite of Weiss. It is effected by a pair of handles projecting at right angles from the lithotrite, and resembling in appearance those of a pair of tooth forceps. By the closing of these handles the necessary movements of the lithotrite are effected. The advantage is rapidity of motion when small pieces of stone are being crushed. The screw can be employed when thought preferable, as the lever does not in the least interfere with its use. (Dr. P. H. Watson, p. 132.)

NEPHRITIC IRRITATION—*Extractives in the Urine an Early Sign of.*—The extractives of the blood may escape in the urine and constitute a constant and important drain on the system, often the forerunner of albuminuria. Their presence may be detected by tincture of galls, which immediately precipitates them. (Dr. O. Rees, p. 86.)

RETENTION OF URINE—*New Instrument for.*—The author describes a new form of catheter and guide for the relief of retention of urine. The principle of the thing is the passage of a fine whalebone guide, upon which the catheter is then passed. A number of these guides must be at hand, and if the first one catches in a false passage it is to be left there, and a second passed, if that catches it is also to be left, and a third passed. By this means the false passage becomes blocked up at last. The guides before using should have a very slight spiral twist imparted to them by dipping in hot water, twisting round a small staff, and suddenly cooling. (Dr. J.W. S. Gourley, p. 143.)

STRICTURE OF THE URETHRA.—In cases of chronic stricture in which it is necessary, from time to time, to pass an instrument, do not be too ambitious to pass a large one. Much error exists on this subject. One is apt to think that the larger the instrument the greater the chance of cure. In these cases, however, the reverse is true, and moderately-sized instruments are most suitable. (Mr. J. Adams, p. 141.)

Non-rupture of the Urethral Mucous Membrane by Holt's Dilator.—Cases of traumatic stricture of the urethra can rarely be treated except by either urethrotomy or forcible rupture by Holt's dilator. Holt's dilator, however, possesses the advantage over the other operation of leaving the urethral mucous membrane entire, and only rupturing the submucous indurated structures. This has only been quite recently discovered, for the opportunity of examining a urethra which has been only recently operated upon very rarely occurs. If a stricture be experimentally split up in the post-mortem room it will be found that the mucous membrane itself is split. This does not occur during life. (Mr. C. Heath, p. 138.)

PHYMOSIS.—*Sudden Dilatation.*—A very simple and effectual mode of treating phymosis is by sudden dilatation, whereby the constricting mucous membrane is torn up to the full extent required. It is necessary first of all to calculate the exact amount of dilatation required, and then with an ordinary dressing forceps, or an instrument specially made for the purpose, to suddenly open out the narrowed parts. The only dressing needed is a strip of lint moistened with water, which should be wrapped round the part so as to retain the foreskin retracted, and cover the wound. When there is induration and matting of the parts this plan of treatment is not so successful. The operation will not be successful unless the foreskin is well retracted and so retained for twenty-four or forty-eight hours, otherwise the tear is not transverse. (Dr. F. R. Cruise, p. 251.)

VARICOCELE.—The chief cause of the want of success in the treatment of varicocele is the dependent condition of the testicle, the anatomical arrangement of the vessels remaining unchanged. There is no better plan to obtain immediate palliation of the symptoms, and even a gradual and perfect cure than suspension of the testes directly upwards. The suspender consists of a piece of web about 3½ inches wide at one end, 4½ inches long, 4 inches wide at the other, and cut gradually tapering to the narrower end. A piece of thick lead wire is stitched in the rim of the smaller end, and the sides are furnished with neat hooks, a lace, and a good tongue of chamois leather, two tapes being sewn along the entire length of the web, which are afterwards attached to the suspending belt. The application is easily made by the patient in the morning before rising, and when the parts are relaxed, laying the affected organ, while in the dependent position, in the "suspender," and lacing up the hooks with a moderate degree of tightness, then raising it up and attaching the tapes to the suspending belt previous to rising from bed. It is not necessary that the suspender should be worn at night. (Mr. T. Morgan, p. 255.)

FRACTURES, OPERATIONS, AND DISEASES OF THE BONES AND JOINTS.

Abscess Drainage by Spiral Wire Tubes.—Tubes made of very fine hard brass wire, by coiling it regularly and evenly over a fine steel rod, are very useful as drainage tubes. They are especially so when a sinus is tortuous and long, and in cases where it is desirable to drain the uterus of pus, blood, or retained secretions. No inflexible tube could be left in the cervical canal without causing pain and injury. The coils of wire should not be quite close, they should be pulled out very slightly, so as to make the tube more flexible, and to allow of the secretions of the canal itself to exude into its interior. For an ordinary abscess, tubes of this kind may be introduced on a probe or director and often without any such assistance, by a spiral coaxing sort of motion. (Mr. R. Ellis, p. 260.)

Antiseptic Cere-Cloth for Covering Wounds.—The author recommends the use of calico, steeped in an antiseptic mixture of carbolic acid and paraffin as a covering for wounds. Of the three formulæ he gives for the preparation, the one of medium strength is the following:—Pure carbolic acid, f. ℥ ij; olive oil, f. ℥ iiss; yellow wax, f. ℥ iiss; paraffin, f. ℥ v. Mix. Cere-cloth made with this moulds itself readily to any peculiarity of form, and at the same time does not adhere so closely to the part to which it is applied that it cannot readily be removed. The carbolic acid is slowly dissipated by the heat of the body and so forms an antiseptic atmosphere round the wound. (Mr. E. Lund, p. 229.)

Condy's Fluid as a Dressing to Wounds.—Condy's fluid is quite as good as carbolic acid as a dressing to wounds, and is much more pleasant, the smell of the latter being almost insufferable to many patients. (Dr. V. Stone, p. 99.)

Club-Foot.—*Direct Extension.*—Fix two broad straps of adhesive plaster, one on either side from the knee to the malleoli, and hanging free for twelve inches below, these straps being prevented from slipping when drawn upon by two or three circular straps, encompassing, but not compressing the leg. The foot must then be placed flat on the common iron foot splint, and the heel drawn down by knotting the two straps of plaster underneath the splint. For this purpose they are to be passed through the slits in the heel. The splint referred to is a simple flat foot piece of thin iron, having three slits near the edge at each side, for the passage of plaster or bandage; and a hollowed or concave upright piece to the ankle and lower part of the leg. The heel being fastened down in the way described, the anterior part of the foot is to be applied to the foot piece, and retained in position by straps of plaster. Of course, a very prolonged treatment in this way is often required. (Mr. J. Tufnell, p. 254.)

Hare-Lip—*New Method of using Needles in the Operation for.*—To all the methods of inserting hare-lip pins there is this great objection, that they are liable to leave scars. This may be prevented by the following plan. Introduce two ordinary seamstress's needles, armed with a few inches of silver wire doubled through the flaps in the form of a St. Andrew's cross, so that the points of each come out at the roots of the alæ of the nose, on the opposite side to that on which they were respectively introduced. The needles cross in the middle of the wound. The heads of the needles having now been buried in the tissue of the lip, and the points cut off and retracted within the flesh, by twisting the wires together the edges of the wound may be perfectly and accurately brought together. (Mr. L. Tait, p. 104.)

Suture Pin Conductor for Hare-lip.—The author describes a suture pin conductor, useful for facilitating the introduction of suture pins in such cases as hare-lip. It resembles in appearance the curved hollow needle used for introducing metallic sutures. This instrument is first passed through the parts where it is desired to introduce the pin, and the latter is inserted by its point into a perforated hole at the end of the conductor. The conductor is then withdrawn, taking with it the pin into its proper place. (Dr. G. Buck, *New York, p. 104.)*

Interrupted Suture.—*Method of Applying by means of fine Sewing Needles.*—Take a number of fine sewing needles and insert and fix each in the following manner: Pass it through the cutis alone of the margins of the edges of the wound, and bringing them together secure them in that position by passing a single noose of ligature silk from one extremity of the needle to the other. The needles should be inserted at distances of about three-eighths of an inch, until the whole wound is closed. The extremities of the needles should be nipped off with a pair of pliers, merely allowing the eighth of an inch to project at each side. It is a good plan however only to pass the needle so far through the tissues, that it shall be unnecessary to remove any of the point, as the tapering form of this portion facilitates its removal, which should be done the next day. The wound should be washed with weak carbolic acid lotion before closing it. (Dr. J. Lamprey, p. 102.)

Pathology of Joint Disease.—Clinically it is important to bear in mind the distinct origin of diseases of joints in either the bone or the synovial membrane. There is no such thing as primary disease of the articular cartilages. Changes in the cartilage are always secondary to one of the two primary affections; when of the synovial membrane the change is slow and partial, when of the bone rapid and complete. (Mr. T. Bryant, p. 90.)

Strumous Diseases of Joints.—If we look for the points of difference between the so-called strumous disease and the chronic inflammatory affection we shall fail to find them. They are not clinically to be distinguished. The term strumous disease ought to be expunged from our vocabulary, for its use certainly misleads by encouraging the idea that the disease to which it is applied has more a constitutional than a local action, and is consequently incurable. (Mr. T. Bryant, p. 89.)

AFFECTIONS OF THE SKIN, ETC.

Ekzema of the Scalp and Eyelids.—There are two parts of the body to which the benzoated oxide of zinc is unsuitable as a local application for ekzema, these are the eyelids and the scalp. In the first situation it is liable to get upon the conjunctiva and cause irritation, and in the second it mats the hair and prevents that perfect cleanliness which is so necessary. For it you should substitute the nitric oxide of mercury ointment, diluted in the proportion of one part to three of benzoated lard. (Mr. E. Wilson, p. 156.)

Herpes Zoster.—The greatest advantage results from immediately painting the vesicated patches over with flexible collodion, and repeating the application as often as required. (Editor of Dublin Quarterly Journal, p. 163.)

In-Growing Toe-Nail.—When the case is advanced, nothing answers satisfactorily except removing the half of the nail on the side of the disease, or a narrow slip of it. In the early stage it will suffice to cut out the in-growing corner of the nail and cauterise the granulations deeply with nitrate of silver. A small pad of lint should be so fixed by a strip of adhesive plaster as to press the skin *from* the nail, and the patient should be directed to wear wide-toed boots. (Mr. Croft, Mr. Heath, p. 165.)

Saturate a piece of cotton wool with a solution of liquor potassæ (two drachms to the ounce) and press it gently down between the upper surface of the nail and the soft tissues, which latter are usually in the form of a fungous mass of granulations. The solution softens and pulpifies both the nail and the granulations, and they become in time entirely dissolved and removed at the diseased part. The lotion must be continued until all ulceration has disappeared. (Mr. Norton, p. 164.)

Powdered nitrate of lead is an excellent application to the sanious fungous ulcers resulting from onychia. A single application every twenty-four hours is sufficient, a light bandage being put over the diseased surface. After the first dressing the pain ceases, the swelling decreases, and the fœtid odour is destroyed. (Dr. de Moerloose, p. 166.)

Ulcers of the Legs.—*Medicinal Treatment.*—Sufficient prominence is not given to the medicinal treatment which experience proves is useful in cases of ulcers of the leg. Opium, iodide of potassium, and arsenic, each has its appropriate class of cases. Opium is most suitable in cases of chronic callous ulcer, in the small irritable ulcer occurring with varicose veins, and in any form of ulcer in which sloughing action has supervened. Iodide of potassium is an "infallible" remedy in cases of ulcer dependent upon a syphilitic taint, when given in ten grain doses, thrice daily, in combination with an alkali. The majority of these ulcers occur in women, and are traceable, in most cases, to infection through the husband. Arsenic, in doses of 10 to 15 minims of the liquor arsenicalis, is to be employed in those cases in which chronic ekzema is a concomitant if not an antecedent of the ulcer. (Mr. C. Heath, p. 166.)

VENEREAL AFFECTIONS.

Buboes.—If a bubo is opened by an incision parallel with Poupart's ligament, as is usually done, every movement of the thigh or body tends to disturb the coaptation of the edges of the wound. As is well known, the process of filling up and healing of the part is extremely tedious. This is not the case when the incision is vertical, and in the centre of the suppurating gland. It should be just sufficiently large to allow of the free exit of the pus. A solution of carbolic acid, one part to ten, should be injected into the bubo next day, and the part covered with lint, wet in a weak solution of acid. The carbolic acid will be found to prevent the secretion of pus. If a second bubo forms near the first, a probe must be passed into it through the aperture in the first bubo, and a small aperture made in the integument, so as to allow of the escape of the pus. The carbolic acid lotion may now be forced through both buboes, by a syringe placed at the opening in the first. (Dr. J. Lamprey, p. 171.)

Gonorrhœa.—*Continuous Injections.*—The reason of the failure of most injections in gonorrhœa is, that they are not applied in a manner and quantity to reach the deeper portions of the urethral canal, which is always diseased. The general idea that the inflammation is confined to the terminal portion of the canal, is quite erroneous. A continuous injection may be made with a two-ounce bottle, having two india-rubber tubes connected with it, and springing from two glass tubes perforating the cork. One glass tube should reach just through the cork, the other nearly to the bottom of the bottle. The india-rubber tubes should terminate, one in a small mouth piece, the other in a nozzle suitable for introduction into the urethra. The injection to be used (bisulphite of lime, ʒj. to ℥j. water) can be forced in a continuous stream, by blowing air into the bottle by the mouth-piece. This of course is done by the patient. (Mr. J. Morgan, p. 170.)

Syphilis.—Iodide of potassium with blue pill, is the most suitable plan of treatment for secondary syphilis; the double compound of iodide of mercury and potassium, for syphilitic inflammation of deeper tissues, and for the earlier tertiary phenomena of syphilis; the bichloride of mercury for the intermediary squamous syphilides. (Dr. J. K. Spender, p. 170.)

Subcutaneous Injection of Mercury.—In administering mercury for the cure of syphilis, the object should be to avert any affection of the mouth, or any other physiological action of the drug, the occurrence of which will necessitate our discontinuing the remedy, before it has exerted its curative influence on the disease. The occurrence of tenderness of the gums and salivation, is no criterion of the amount of mercury absorbed into the system, or of the remedial power of the drug. During the administration of mercury, its action upon the gums should be guarded against by the patient's frequently sucking a little alum. The plan of injecting the mercury subcutaneously, in the form of bichloride, is that which is freest from the risk of complications. A solution should be made, containing 1 grain in each 100 minims of fluid, and of this, 10 minims may be injected every second or third day. Equal parts of water and glycerine form the best menstruum. (Dr. T. J. Walker, p. 168.)

AFFECTIONS OF THE EYE.

Iritis.—The patient being rightly placed and the sound eye closed, let the shadow of the surgeon's hand fall upon the affected eye, and then leave it suddenly two or three times in succession. If the pupil dilate and contract slowly and uncertainly, iritis is to be suspected. Atropine should then be applied, and if iritis is present the pupil will resist dilatation, and will become irregular in shape. It is possible to mistake acute glaucoma for iritis, but this error may always be avoided by remembering that acute glaucoma is the only inflammatory disease of the eye in which the pupil is found dilated. (Mr. R. B. Carter, p. 147.)

In every case of iritis, whatever else may be done or left undone, the one thing that should never be omitted at the commencement of the treatment is the application of atropine. The atropine acts not only by producing dilatation of the pupil, but by actually reducing the inflammation. It diminishes hyperæmia by producing some contraction of the blood-vessels, and secures rest to the parts within the eye by producing temporary paralysis of all the parts concerned in the intraocular movements of the eye. (Mr. R. B. Carter, p. 148.)

No good will ensue until the pupil is widely dilated. The plan I generally pursue is to direct the patient to apply a strong solution of atropine (four grains to the ounce) every five minutes for the first half hour, and repeat this for half an hour at a time, three times daily. Mercury need only be given if there is a very considerable exudation of lymph at the edge of the pupil, or if there is a syphilitic taint, and in these cases, I generally prefer inunction. (Mr. J. S. Wells, p. 265.)

Ophthalmia Neonatorum.—If the inflammation runs high and the discharge is thick, creamy, and copious, the following injection will be found serviceable: Sulphate of zinc, two grains; alum, four grains; distilled water, one ounce. Some of this is to be injected with a small glass syringe between the lids every fifteen or thirty minutes during the day, and every two or three hours during the night. Every day or two a drop of a strong solution of nitrate of silver (from four to ten grains to the ounce) may be applied. Should the cornea become ulcerated atropine drops may be applied. If the ulcer threatens to perforate it should be pricked with a needle, and the aqueous humour allowed to flow out. This may be repeated several times. (Mr. J. S. Wells, p. 144.)

Paralysis of the Third Nerve.—*Calabar Bean.*—In cases of paralysis of the third nerve, accompanied, as it always is, with paralysis of the levator palpebræ and recti muscles, the use of extract of Calabar bean locally applied offers us a prospect of cure. It has not yet been sufficiently tried, but in one case, carefully recorded, it apparently acted as a direct stimulant to the third nerve. Atropine on the other hand acts as a stimulant to the sympathetic nerve, and hence arises their difference of action upon the pupil. The sixth nerve which supplies the external rectus is in intimate connection with the sympathetic, and in paralysis of this muscle atropine is more suitable than the Calabar bean. Atropine and Calabar bean are not only antagonistic in their action on the nerves, but in their action on the vessels, for whilst atropine contracts the arteries, Calabar bean contracts the veins. This may be readily demonstrated on a rabbit's ear, and may be seen in the action of a solution of the extract on a slightly congested conjunctiva. (Mr. T. W. Jones, p. 149.)

Phlyctenular and Granular Ophthalmia, Pannus, &c.—*Tannic Acid.*—The application of a little finely powdered tannin to the eye or lids is of use in several affections of the eye and eye-lids. Phlyctenular ophthalmia, characterised by the appearance of one large pustule, or two or three smaller ones at the edge of the cornea, and herpes corneæ of strumous children, generally yield rapidly to daily dusting of the cornea with tannic acid. In the case of strumous children general treatment is also required, such as quinine and cod-liver oil, with calomel. In granular ophthalmia the tannin should be dusted on the palpebral conjunctiva. (Mr. R. Hamilton, p. 145.)

MIDWIFERY, ETC.

Carbolic Acid in Obstetric Practice.—It is of great service to wash out the cavity of the uterus with weak carbolic acid lotion, or permanganate of potash, in cases where the lochial discharge is offensive, or where there is reason to suspect retention *in utero* of a portion of membrane after abortion, and in cases where there are decomposing coagula in the utero-vagina canal. The whole of the benefit must not be attributed to the disinfectant, as of course the simple washing out is of itself an important matter. (Dr. J. G. Wilson, p. 205.)

Dysmenorrhœa.—*Obstruction of the Cervical Canal.*—In cases of partial retention of the menstrual fluid, arising from obstruction of the cervical canal of the uterus, or from the bent state of the part accompanying displacements of the womb, the greatest advantage may be derived from introducing a drainage tube, made of fine hard brass or copper wire. These tubes are easily made, by winding the wire round an ordinary knitting needle. They are extremely flexible, and adapt themselves readily to any curve. The tube should be passed mounted on a uterine sound, the cervix meanwhile being fixed by a tenaculum. A morsel of vulcanised india-rubber tube should be slipped over the free end of the tube, to prevent its abrading the posterior wall of the vagina. (Mr. R. Ellis, p. 260.)

Flexions of the Uterus.—*India-Rubber Pessary.*—The author uses a pessary for flexions of the uterus, which is a small, almost inelastic india-rubber ball, attached at an obtuse angle by a short neck, to an ordinary elastic inflatable pessary. After introduction into the vagina, the inflation of the pessary forces the small india-rubber ball between the uterus and bladder, restoring the uterus to its normal position in cases of anteflexion. The pessary must be passed with a small ball, looking towards the uterus. In cases of retroflexion, it is only necessary to pass the pessary along the posterior wall of the vagina, reversing in short, the introduction of the pessary to what obtains in cases of anteflexion. (Mr. J. Clay, p. 204.)

Intra-Uterine Disease.—*The Endoscope.*—The endoscope may prove a most useful adjunct to our means of diagnosis, in cases of intra-uterine disease. The author relates a case of small fungous growth, within the uterine cavity, giving rise to sanguineous discharge, which he was able, by the aid of this instrument, to see distinctly. It was easily removed by the application of caustic. (Dr. D. C. Pantaleoni, Paris, p. 191.)

Opium.—*Its Action upon the Uterus.*—The action of opium upon the uterus, is to stimulate contraction of the fibres of the body of the uterus, whilst it relaxes those of the os. Opium, although it may relieve false pains, never can and never did, arrest a physiological labour. This action of opium may be made of service, when the os uteri refuses to dilate, notwithstanding the regular occurrence of pains. In placenta-prævia, opium not only acts as a hæmostatic, but it facilitates dilatation, and thus shortens the period of the greatest danger, and also promotes the expulsive power of the uterus. It may be administered with advantage in ordinary cases of labour, instead of ergot: and when the placenta is detained, owing to hour-glass contraction of the womb, it will be found to relieve the irregular contraction, and cause expulsion of the after-birth. (Dr. P. C. Barker, p. 173.)

Ovarian Dropsy—*Advantages of Tapping in.*—After one or two tappings, especially if the cyst has attained a considerable size, there is usually a marked improvement in the patient's health, and a considerable reduction in the original size of the tumour, so that if ovariotomy becomes necessary, moderate incision only in the abdominal wall is required. Moreover, the tendency of the peritoneum to inflame, seems to diminish with the duration of the disease, probably on account of the continued friction of this membrane against the surface of the cyst, diminishing its sensitiveness. Considering these facts, and in view of the admitted great fatality of ovariotomy, it is always advisable before recommending the major operation, to tap the cyst two or three times, both on account of deferring the necessary risk to life, and of decreasing the amount of that risk, when it is necessary to encounter it. (Mr. G. Southam, p. 249.)

OVARIOTOMY.—*The Pedicle.*—The pedicle of an ovarian tumour on reaching the cyst spreads out, and its vessels become much subdivided, so that they only enter the cyst or tumour as capillaries. It is a singular fact that the pedicle can be peeled off from its attachment to the tumour, and in consequence of the minute size of the vessels ruptured there is hardly any perceptible hemorrhage, and the pedicle can be returned into the abdomen without any treatment whatever, neither by ligatures, nor cautery. (Dr. J. F. Miner. p. 208.)

Ovariotomy during the Existence of Peritonitis.—It is evident from the success of a case of ovariotomy performed during the existence of acute peritonitis that we are sometimes too much afraid of acting vigorously when we have to do with the peritoneum. It is probably only in the cachectic that we need fear evil results, and that only in those unhealthy patients in whom, when the subjects of peritonitis, creamy lymph is poured out. Mr. Spencer Wells lately successfully operated in a case of ovarian disease in which, when the peritoneal cavity was opened, a patch of peritonitis was found, the existence of which had not been suspected up to that moment. (Dr. A. Wiltshire, p. 205.)

PAINFUL MENSTRUATION.—*Alcohol.*—It is quite true that alcohol will relieve the pain of difficult menstruation. It is also true that if the brandy can be administered strictly as a medicine regulated to the minimum dose necessary, no harm will be done, though no permanent cure can be expected. But during the whole of the menstrual period of life, the organism is so exquisitely alive to its own emotions, that the effect of a false step in the direction of narcotic indulgence may be tremendous. It is a good rule never to recommend, or even allow, a patient subject to ovarian neuralgia to take alcohol at all, except in the ordinary quantities *with meals.* (Dr. F. E. Anstie, p. 29.)

PROSTRATION ARISING DURING THE PUERPERAL STATE.—Turpentine given internally, or by injection, is not only, as is well known, extremely useful in cases of uterine hemorrhage, but in those cases of great prostration, characterised by rapid pulse, tympanitic abdomen, and other symptoms not connected with peritoneal or other fever, yet threatening the advent of a typhoid condition. In an interesting typical case, the injection of turpentine and mucilage by the bowel seemed the first thing to light up the dying members of life. (Mr. E. Garraway, p. 190.)

PUERPERAL FEVER.—Puerperal fever, or erysipelas, for the two diseases are without doubt the same, may obtain entrance to the puerperal chamber in two modes, viz., epidemic influence and contagion. If the disease is epidemic it will make its way into the private house as surely as into a lying-in hospital. When carried by contagion, it is by erysipelas conveyed by the medical attendant. No one should attend parturient women who is in attendance on any other than a lying-in hospital, or in any dissecting room. (Dr. Beatty, p. 187.)

There can be no doubt puerperal fever is producible by inoculation from the hands of the accoucheur. Students whilst attending lying-in hospitals, or midwifery in private practice, ought to be precluded from dissecting, and the man who devotes himself to obstetrics should abjure the study of pathological anatomy. (Dr. M'Clintock, p. 189.)

Local Depletion.—Local depletion is our sheet anchor in this disease, the secret of success being to reapply leeches every six or eight hours, before reaction is established, and as long as the pulse indicates the propriety of further abstraction of blood. If enough has been taken the pain should be relieved and pressure borne. There is no doubt of the efficacy of mercury, if its specific effects can be produced, but in the worst cases the system seems insusceptible of its action. When the disease is expected it is a good plan to commence the administration of mercury immediately the labour is over; so as very gently to affect the system. We should not forget that should the disease progress collapse may be expected; our treatment, therefore, should be two-handed, and whilst we should keep under the disease we must keep up the strength by nutritious broths, jellies, milk, and farinaceous foods. (Dr. E. Kennedy, p. 18.)

Obstetric Forceps.—*Curve of Blades.*—Many modern forceps are curved so sharply that the blades are only in contact with the head at two points. The greatest distance between the blades when worked should be a trifle under three inches, they will then be in close apposition with the head throughout the entire length, and therefore very little liable to slip. (Dr. T. M. Madden, Medical Press and Circular, Sept. 1, 1869, p. 181.)

Sore Nipples.—*Nitrate of Lead.*—Nitrate of lead dissolved in glycerine, in the proportion of ten grains to the ounce, is an excellent application to excoriated nipples. It should be applied by means of a small camel's-hair brush. It will not cure every case, but it is seldom that disappointment results. Care must be taken to wash the nipple previously to applying the infant. (Dr. J. S. Wilson, p. 194.)

Sea-tangle Tents.—*To introduce into the Cervical Canal.*—Cut off the end of a gum elastic catheter, leaving the stilet projecting. The tents must be bored so as to allow of being mounted on the projecting portion of the stilet, but care must be taken that the wire does not project. The string which is attached to the lower end of the tent, being carried down by the side of the catheter, is held by the same hand. The arrangement can then be introduced without a speculum, as an ordinary uterine sound. (Dr. J. B. Hicks, p. 210.)

Sponge Tents.—*To Prepare Rapidly.*—Having wet the sponge to be used with water, and then pressed it as dry as the strength of the hand will allow, press it into a quill, or any suitable tube or mould. If it is now immersed in spirit sufficiently strong (90 to 100 per cent.), it will immediately set into the given shape, and will be hard and inflexible, and can be cut or trimmed to a point if desired. To restore it to its former size and shape it is only necessary to moisten it with a few drops of water. (Dr. J. B. Hough, p. 212.)

Spina-Bifida.—*Ligature.*—A case of spina-bifida is related in which the tumour was successfully removed by means of ligatures. Two days after birth a silk ligature was applied round the neck of the tumour and only tightened slightly. The following day another ligature was applied a little tighter without disturbing the first, and the following day a third. The three ligatures were all kept on until the tumour sloughed off, which it did in three weeks, leaving only a very small wound, which readily healed. Three years have now elapsed and the child is strong and healthy. (Dr. E. Sidebottom, p. 100.)

Sub-Mucous Fibroid Tumour of the Womb.— Dr. Palfrey has operated upon 119 cases of sub-mucous fibroid tumour of the womb with only one death, and that in a case of Bright's disease of the kidney. He divides freely the cervix uteri by means of a hysterotome, cutting through both the outer and inner os, and then passes up a long narrow-bladed knife, serrated at the edge like a saw. By a firm and pretty decided sawing movement the knife must be made to divide the tumour, up to, or nearly up to its uterine attachment. The blade must be then turned to the right, and a lateral cut made in this direction, then a similar cut to the left. The cuts must be well plugged with strips of oiled lint, and the vagina with plugs of balls of cotton-wool, tied at small distances to a piece of whipcord, for convenience of withdrawal afterwards. Thirty hours afterwards the vaginal plug should be removed, and the part gently washed out with a tepid douche. The actual removal of the tumour by the surgeon is unnecessary, it will gradually disappear, or come away as discharge. (Dr. J. Palfrey, p. 198.)

Tedious Labours.—*When to Interfere.*—The pains may cease under two conditions. In the first the uterus is relaxed, it is resting quietly, and pains will return in time. In the second the uterus is contracted, the action is continuous, the pains have become more rapid, but weaker, until they have ceased, and spasmodic contraction alone remains. In this case chloroform should be used to diminish the violence of expulsive pains; when, however, the state of continuous action has set in, the sooner we interfere the better. (Dr. G. H. Kidd, Dr. J. B. Hicks, p. 177.)

Vomiting of Pregnancy.—*Oxalate of Cerium.*—The following constitutes a most successful plan of treatment. ℞. Cerii oxal., ext. lupuli āā gr. 24; div. in pil. xij., cap. j. ter in die. At the same time exhibit bromide of potass in ten grain doses, with the tincture of yellow cinchona bark and spirits of ammonia. (Dr. J. W. Curran, p. 176.)

MISCELLANEA.

ANÆSTHESIA.—*New Mode of Exhibiting Nitrous Oxide.*—Any admixture of air with nitrous oxide greatly impairs its efficacy as an anæsthetic. The insensibility is less perfect, and is less rapidly produced than when the gas is perfectly pure. The apparatus should be so arranged that the residual air of the lungs can be first diluted with nitrogen, and then pure nitrous oxide may be turned on for inspiration. During the inhalation of nitrogen the pulse will be found to fall steadily, but upon supplying the nitrous oxide it soon regains its force and frequency. (Mr. A. Coleman, p. 244.)

APOMORPHIA.—This base is procurable from cordeia, which it resembles in chemical constitution. It is one of the most certain emetics known, $\frac{1}{10}$ of a grain subcutaneously, or $\frac{1}{4}$ grain by the mouth, being the dose required. The disadvantage of it is that it is a depressant in some cases, the patient seeming as if his muscular power were gone; the vascular system, however, does not appear to be depressed to an equal extent. (Dr. S. J. Gee, p. 226.)

BIRD'S INHALING PIPE.—Mr. Bird has recently invented a pipe for the inhalation of various medicinal substances. In appearance it resembles an ordinary short pipe, with a cap or stopper at the top of the bowl. On lifting the cap a felt sponge is found on its under surface, for the reception of the fluid to be inhaled. Chloroform combined with camphor, carbolic acid, and spirits of wine may be thus inhaled; or the sponge may be removed and any suitable preparation of mercury or iodine may be smoked over either ignited tobacco, stramonium, or hemlock, with the greatest facility, and the fumigation continued far more persistently than by any other of the usual methods. (Mr. J. Bird, p. 234.)

CHARCOAL RESPIRATORS.—Charcoal is the best material of which to make a respirator. It possesses two advantages over the ordinary metallic wire, viz., it purifies air drawn through it of foreign gases and mechanical impurities ever so finely divided; and it actually warms the air so drawn through about two degrees more than does wire gauze. A charcoal respirator will not only warm the cold air breathed out of doors, but will also impart additional heat to the air of a room comfortably warm, although considerably under the temperature of the body, and it is questionable whether in certain cases the indoor use of the respirator may not be attended with advantage. (Dr. W. Marcet, p. 241.)

CHLORAL.—Chloral is not introduced to the profession as a rival of the anæsthetics used in operative surgery, but as a substitute for opium. When administered in an efficient dose (a drachm is not an immoderate dose for an adult), it produces on man and on the inferior animals a kind of stupor or sleep, which may be made to extend over five, or even seven hours with comparative safety. It is attended with great muscular prostration, and with decrease of animal temperature. The hydrate of chloral is a white solid substance, having a pungent smell, with which is combined the odour of ripe melon. The hydrate dissolves readily in water, and thirty grains of it dissolved in forty of water make up one fluid drachm of a saturated solution. (Editor of Lancet, p. 216.)

Chloral, so far as at present appears, possesses all the advantages of opium, and none of its disadvantages. It rarely causes nausea, never vomiting, nor does it leave behind it headache, nor loss of appetite. The sleep produced by it is gentle, and unattended with any symptom of distress. Cats purr as they pass into rest in obvious comfort and repose. During a portion of the period of narcotism, there may be complete anæsthesia with absence of reflex actions, and a condition in which every kind of operation fails to call forth consciousness. In the transition from drowsiness to stupor there is no stage of muscular excitement. The action of the substance on the nervous system is primarily on the sympathetic ganglia, afterwards on the cerebrum, and finally on the heart. (Dr. B. W. Richardson, p. 217.)

Chloral is a rather pungent liquid produced by the action of chlorine upon alcohol, and it forms a crystalline hydrate with water. When this hydrate is administered medicinally it is decomposed in the blood, and chloroform is set free, producing its usual effects on the nervous system; but different in this respect, that the action is more prolonged in consequence of the slow evolution of chloroform, and the troublesome sickness of chloroform does not follow. In a case in which the hydrate of chloral was given in doses of forty-five grains, sound sleep was procured every night, and complete relief to distressing neuralgia. The patient complained of headache next morning. The German journals state that there is complete freedom from any distressing after-effects. (Mr. T. S. Wells, p. 223.)

Thirty grains of chloral give about as much relief to pain as one grain of opium, but its effects are more immediate. It is not so certainly followed by sleep, or by sleep of such long duration; but on the succeeding day no kind of ill effect is observed. (Mr. T. S. Wells, p. 225.)

Hydrate of chloral varies considerably in its action with different constitutions. Whilst in one case forty grains will procure sleep, in another seventy may produce no effect. When sleep is produced it is always rapidly so, and it is generally calm and peaceful, but in most cases slight congestion of the head and face, and slight perspiration are noticeable. (Mr. J. H. Barnes, p. 268.)

CHLOROCODIDE.—This is a base procurable from codeia, intermediate in composition between it and apomorphia. It is a most intense bitter, and may prove useful as a stomachic and tonic. A quarter of a grain taken by the mouth causes an uncommon sense of tonicity in the abdomen. Quina, which is so often given as a stomachic, is a much less intense bitter than chlorocodide, and tends to produce fulness, and aching of the head, which chlorocodide does not. (Dr. S. J. Gee, p. 226.)

DIAGNOSIS OF DEATH BY THE PUPIL.—If a fully dilated pupil is found in connection with the cessation of the respiration and the circulation, we may safely conclude that life is extinct, and that the process of artificial respiration would be futile. In a case of bronchitis in a child, death had apparently suddenly taken place, but the pupil remained contracted, and artificial respiration brought the little patient round, with the aid of friction to the feet and legs. (Mr. C. M. Jessop, p. 71.)

DRY-EARTH SYSTEM FOR CAMPS.—There can be no doubt that next to efficient sewerage the dry-earth system is the best mode of disposing of human excreta not detrimental to health. Sewerage is out of the question in camps. The only objection to the earth system is its cost. Dried and finely pulverised clay is more efficient than earth; indeed at Madras, where the whole thing has been thoroughly tried, seven pounds of the clay was found to equal seventeen of earth. If it becomes necessary to deposit liquid ordure in pits, carbolic acid should be added, as it quite prevents decomposition. (Surgeon-Major Wyatt, p. 263.)

GUINEA WORM.—*Mode of Rapidly Extracting.*—Dip a silver probe in a mixture of one part of carbolic acid to three of oil, and pass it upon each side of the worm as far as it will go up the sinus. This will destroy the resisting power of the worm for a certain length, and if drawn upon it will be found to come out *freely*. As soon as resistance is felt the acid must be applied again, and a fresh portion extracted, until the whole is removed. In a case treated in this way the whole worm was removed in about two hours, and it measured thirty inches in length. (Mr. J. Tufnell, Dublin Quarterly Journal, Aug., 1869, p. 45.)

INFLUENCE OF CITIES ON THE ATMOSPHERE.—Dr. Angus Smith, the inspector under the Alkali Act, has in his fifth official report, furnished some interesting information as to the effect of large cities, and especially of manufactories, in contaminating the atmosphere. The following extracts express some of his principal conclusions:—

"The rain from the sea (Western Islands) contains chiefly common salt, which crystallises clearly.

"The sulphates increase inland before large towns are reached.

"The sulphates rise very high in large towns, because of the amount of sulphur in the coal used, as well as decomposition.

"When the air has so much acid that two or three grains are found in a gallon of the rain-water, or forty parts in a million, there is no hope for vegetation in a climate such as we have in the northern parts of the country.

"Free acids are not found with certainty where combustion or manufactures are not the cause.

"Experiments in the direction indicated above may enable us to study and express in distinct language the character of a climate, and certainly of the influences of cities on the atmosphere.

"In Manchester, in 1867, the maximum acidity of the rain was 7.39 grains per gallon, and the minimum 0.31 per gallon." (British Medical Journal, Oct. 30, 1869, p. 471.)

Acidity of Rain.—In Dr. Angus Smith's fifth annual report as Inspector under the Alkali Act, he supplies the following statement as to the relative proportion of acid in rain-water from different localities.

"The total acid in rain collected from various sources bears the following relationship:—

Row, Dumbartonshire	100.00	— 1
Whiston, ten miles from Liverpool	470.67	— 4¾
Birkenhead	528.29	— 5¼
Liverpool	938.21	— 9⅖
Waterloo, on the shore	961 98	— 9⅓
Newcastle-on-Tyne	1054.73	— 10½
Manchester	1175.54	— 11¾
Near an alkali work	1539.27	— 15⅖

"We can scarcely be surprised, after glancing at this table, at the rapid decay of stone in certain localities, compared with others, and the long endurance of buildings of antiquity which are far from large towns and in a pure and open air—such as the Parthenon and the Pyramids of Egypt."

Alkali works liberate free acid which is brought down in rain-solution, to the great injury of vegetable life. It was to prevent this that the Alkali Act was passed. (British Medical Journal, Oct. 30, 1869, p. 471.)

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BEING

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THE LECTURER ON MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN AT THE LEEDS SCHOOL OF MEDICINE, ETC.,
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PRACTICAL MEDICINE.

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

1.—THEORY OF CONTAGION.

By the Editor of the BRITISH AND FOREIGN MEDICO-CHIRURGICAL REVIEW.

If we confine our attention exclusively to those general diseases which are ordinarily contagious, we shall find *two groups* among them, separated by very distinct characters. 1. In one of these the cause of contagion seems to be a poison derived immediately from man, or from one of the lower animals, and to which we may fitly apply the term *virus*. The best examples of this group are puerperal fever, plague, variola, varicella, and vaccinia; syphilis, malignant pustule, glanders, farcy, and rabies. It will be seen that the majority of these viruses are derived from the lower animals, and are mere exotics in our race. The two which are apparently of human origin—puerperal fever and plague—are produced by decomposition of animal matter; we need not dilate on the evidence as to the former, while Griesinger teaches us that plague in Egypt was owing to the careless burying the dead in that country, and has ceased since improvements were made in this respect.

The viruses are able to retain their properties for a considerable length of time when dried, but are always most active when recently produced. For, with one or two apparent exceptions, they seem to require an actual wound in order for them to enter the body; they are the inoculable diseases "par excellence." After inoculation, local action in the wound precedes infection of the system at large, and in the few instances in which we can follow the course of the poison, it passes through the lymphatics.

Considerable light may be thrown hereafter on the nature of the virus diseases by the study of the analogies which exist between several of them, and certain non-contagious diseases. Thus, Griesinger insists with reason on the similarity between the symptoms of plague and those frequently produced by dissection wounds; rabies finds its analogy in snake-bite; and the connection between puerperal fever and pyæmia is close, though ill understood.

It is to the group of viruses (we would suggest) that Dr. Richardson's theory of an animal poison acting catalytically is applicable. We have already referred to his discovery of a special alkaloid—"septin"—in pyæmia; and in like manner Schlossberger has discovered an alkaloid in the German sausages which produce botulism; the active principle of another animal poison, cantharidine, can likewise be isolated chemically. These analogies would seem to imply that the viruses are not living cells, and that, in the cases where a peculiar rapid formation of cells is noticed, that is a symptom, and not the essential cause, of the disease. We are reduced to more or less probable conjecture as to the physical nature of the viruses, for the results of direct experiment are somewhat doubtful. On the one hand, M. Monoyer succeeded in vaccinating children with matter which had been repeatedly filtered until nothing could be detected in it with the microscope; but, on the other, the more recent and careful experiments performed by Chauveau go to prove that the poison in vaccinia, variola, and glanders is contained in the solid constituents of the pus. The passage of the poison, in several of these diseases, through the lymphatic glands, would seem to imply that it is a liquid.

2. But there are several contagious diseases which are distinguished from the viruses we have just described by very marked characteristics. In the case of cholera, for instance, it is almost demonstrated that the poison, though contained in the morbid excretion, is harmless at the moment of leaving the body, and developes its properties afterwards when in contact with decomposing organic matter. We have no evidence of transmission of the disease by inoculation, or by mere contact; all we know of it leads us to the belief that it is only acquired by swallowing the poisonous substance. Local action does not appear to precede the infection of the whole system, nor do the lymphatics and their glands seem to be the channel through which the poison travels. The frequent epidemics of the disease are owing, probably, to a fresh formation of the poison under certain climatic conditions of heat and moisture, and contamination of the drinking water by sewage; the last cause being the only one absolutely required to spread the already developed disease. The same causes which breed true malignant cholera, and favour its extension, are capable of producing the non-contagious, milder affections of simple cholera and diarrhœa.

Almost all the above description is applicable to enteric fever, dysentery, and yellow fever, as well as to cholera, the "frustate," non-contagious forms of dysentery and yellow fever being well-known; and simple continued fever, febricula, &c., bearing the same relation to typhoid.

None of these four diseases seem to be produced by an animal virus; nay, it is certain with regard to all but enteric fever, and highly probable in that case, that they are often produced afresh entirely outside the living body, under the following circumstances. They are most common in summer and autumn; heat and moisture especially favour their development, and the presence of decomposing animal or vegetable matter is essential.

These conditions are strongly suggestive of the existence of some low forms of fungi; and in the case of cholera, which has been most carefully studied, we seem to be on the verge of proving this to demonstration. With regard to yellow fever, Griesinger, who is usually most careful to avoid any conjecture, believes that it is the strongest instance for the existence of a living miasm as a cause of contagious disease. The harmlessness of cholera dejections when fresh, and their acquiring injurious properties after mixture with impure water, seem to imply that the cholera poison does not pass through all its life changes either within or without the body; this is the more noteworthy, as the substance may exist in totally different forms in different stages of its existence, and may be, therefore, very difficult to identify. The existence of the non-contagious frustate forms of each of these diseases is probably to be accounted for by a change in the quantity or quality of the fermentible matter, as we know this to be the case with the lower fungi. It may be well to caution the reader against supposing that the active principle in fermentation need always be a fungus; M. Pasteur has shown that the production of butyric acid by fermentation is accompanied (and, he believes, caused) by an infusorial animalcule.

This is a brief summary of the grounds for our belief that the animal virus and fermentation theories of contagion are both true, and err only by seeking to explain every case. In one series of diseases, we believe the infecting principle to be a *virus* of animal origin; in another series we think it is a living *miasma* (if we may thus employ a much abused word) produced originally outside the body, but becoming afterwards capable of development within it.

We, of course, choose only the most striking examples of each kind to illustrate our opinion, but we think that all contagious diseases can be classed under one or other of these heads; and, when this is done, the majority will be found to be viruses. Thus, the poison of pertussis is probably inhaled, and acts on the same nerves as that of rabies; it apparently needs to develope locally in the lung during the first stage of the disease, before infecting the whole system. Scarlatina and measles are most likely viruses, as is evidenced by the inoculability of the latter at least, and by their general resemblance to variola and varicella. The incubation stage is looked upon by Niemeyer as the strongest proof of their miasmatic nature; but it is also to be explained as being required for the process of local action of the virus. The production of measles by mouldy vegetable matter is a serious objection to its being due to a virus; the examples have been so few, that we may fairly doubt if the disease thus caused was true ordinary measles.

Typhus, again, is so independent of climatic conditions, and so evidently connected with dirt and overcrowding, that there can be little doubt it is due, not to a miasma, but to a virus, producible "*de novo*," like rabies or plague. The symptoms produced by botulism (German-sausage poisoning) are analogous to those of typhus, and appear after an incubation period of from eight to fourteen days.

We have dwelt at such disproportionate length on what may appear to be a speculative question, because it seems to us that the present confusion of all the phenomena of contagion under one common cause is the chief source of the misunderstandings and controversies which prevail. We will merely add, that possibly science may hereafter prove that animal viruses are also living cells; in that case, the distinction of *origin* between these and the miasmata would still exist.—*British and Foreign Medico-Chirurgical Review, Jan.*, 1870, *p.* 128.

2.—ON THE PROPAGATION OF ENTERIC FEVER.

By Dr. T. Clifford Allbutt, M.A., Cantab., F.L.S., Physician to the Leeds General Infirmary.

I think it is not yet clearly understood by the profession at large that enteric fever is a specific fever, and therefore must, in accordance with all analogy, depend upon a specific poison. We see many accounts of epidemics—accounts which are drawn up with industry and intelligence, but which fail to tell us the origin of the specific poison. The drinking of polluted water is shown, the entrance of drain-refuse into the wells is proved, but the farther problem is too often overlooked—the problem of the introduction of the peculiar poison. It is, however, quite certain that persons may drink fæcal water for months or years, their cesspools may communicate with their wells, their drains may find a way into their water-pipes, and, in consequence, they may suffer from diarrhœa, from low forms of sore throat, from debility, languor, and from other evidences of low vitality, but they do not suffer from enteric fever, unless they drink the specific poison of that disease which may or may not be present in the cesspool or drain, and which certainly is not there unless it be introduced from without. Enteric fever is not caused by the drinking of fæces, whatever else this may produce, but by the drinking of a specific poison whose chief place of development is the infected human bowel, and which is, therefore, often found in human dejections. Unless that element be traced, the origin of the endemic is not discovered. Here, for example, is one of the difficulties which waits for settlement. Can the enteric poison which is known to be carried by water into the system be carried also by the atmosphere into the lungs and blood? Many writers hold that this latter is a means by which the endemic spreads. It is always hard to prove a negative, still more so to prove a negative in a question of such subtlety; the right course is rather to extend, as far as possible, the positive proof of that means which we know; viz., the introduction by water, and to find out whether it will cover all cases.

It seems to me very doubtful whether it will cover all cases. In large towns like Leeds, for instance, where the water-supply is uniform, continuous, and excellent, and where enteric fever is nevertheless prevalent, there would seem to be some farther means at work. For instance, I go frequently into infected houses where the water-supply is all that can be desired, but where there is a strong ventilation from the sewers. In such cases it would certainly seem as if the poison were light enough to be borne upon the wind and thence either breathed or caught in the food. Again, there seems to be some widely spread influence which determines the periods of the endemic. Individuals, or their excrement, must be moving from place to place and carrying infection all the year round; but yet we see endemic outbreaks chiefly in autumn, and their *subsidence* chiefly in spring. The ground-water levels seem to have much to do with this, probably in some mechanical way; and it is certain that rains have much to do with it, as we see in one of the cases I shall now publish, as was seen in the Dundee outbreak so well described by Dr. Maclagan in the *Edinburgh Medical Journal* (Oct., 1867, p. 297); and at Terling also, as was shown in the reports of Dr. Haviland in the *Medical Times and Gazette* for January 11th, 1868; and of Mr. Salter in the same journal for the 7th of March. The fall of rain acts, no doubt, by washing the infecting material into the springs and watercourses. That personal contagion has little or nothing to do with the spread of the disease is now believed by all careful and instructed writers. That mere accumulation of dung and filth has no direct causative power is less clearly seized as a truth; and the hesitation which is felt on this point is now explained by the fact that the poison (whether parasite or not, as Fischer and Hallier have attempted to show,) certainly battens upon excrementitious filth and organic putrefactive matters. In large towns, where many and complex agencies are at work, it is difficult or impossible to trace the beginning and causation of endemics or epidemics, except it be under circumstances so crucial and peculiar as those of the Guildford outbreak. It is in small societies, the circumstances of which are simple, that such investigations are most likely to prove successful. In two such cases, I have been able to trace the origin of enteric fever, and these cases I have now to bring forward. The first case, in point of time, was that of a college belonging to the Society of Friends; it is called the Flounders Institute, and is situated at Ackworth, near Pontefract. The following is the report which I was enabled to make with the kind assistance of Dr. Wood.

"At the request of Mr. Harvey and Mr. Brown, I visited the Flounders Institute on April the 16th, 1869, in order to ascertain the nature of the fever now prevalent at the Institute and in Ackworth, and in order to learn, if possible, the causes of its prevalence. I met your medical attendant, Dr. Wood, accordingly; we visited several patients at the Institute, and I ascertained that the disease from which they were suffering was enteric fever. That opinion you had already heard from Dr. Wood. We also visited severa patients in Ackworth Moor Top, and ascertained they also were suffering in like manner from enteric fever. As is commonly the case, it had fallen chiefly and firstly upon young persons.

"As regards the Institute, I found your conditions as to site, and aspect, and internal comforts, to be most satisfactory. My survey ended, as is common in these cases, by my suspicions falling upon the drinking water. I found that your supply was from two sources. 1. From a well upon your own premises; 2. From a well in the village, to which I shall refer under the name of the watering troughs. First, as to your own well. It appears that this water has been little used for drinking purposes. You have not any cesspool in dangerous proximity to it, your drains are constructed with sanitary tubes, and I do not think it likely that the excreta from the fever-patients in your house have reached your well. I shall show reason for believing that they all derived their poison from one common source; viz., the watering troughs.

"The analysis of your well-water, made by Mr. Wilson of the Leeds School of Medicine, shows that it contains 1·82 grains of organic and volatile matter per gallon, and 4·9 grains of common salt. On the whole, though somewhat unsatisfactory, it may safely be used, provided it be exposed to the air so as to allow the sediment of oxide of iron in combination with organic matter to be fully formed, and that it be then filtered. Mr. Wilson holds the same opinion, and recommends the use of a carbon-filter.

"I now turn to the water at the watering troughs. It appears that this water, which is very bright and pleasant, has been chiefly or entirely used for table purposes in your household. As your Institution is conducted upon the principle of total abstinence, this village water has been largely consumed by your inmates. The watering troughs supply a favourite drinking water not only to yourselves but also to that part of the village of Ackworth called Ackworth *Moor Top*. It is a remarkable fact, which I hear from Dr. Wood, that those persons in the village who have suffered first and most severely are also total abstainers, and have drunk largely of the attractive water of the troughs. The watering troughs and the small well or drinking trough a little above them, are supplied from one stream, and the analysis of the water, as made by Mr. Wilson, is as follows: 'The water from the spring at the watering troughs is inodorous, very bright and clear, and has a scarcely perceptible saline taste; it forms no deposit on standing. An imperial gallon contains 5·04 grains of organic and volatile matters and 6·21 grains of common salt. Nitric acid, which is a product of the decomposition of animal matter, is present in unusually large quantity.' It will be clear to you from the above analysis that the water of the troughs is, in spite of its beautiful appearance, very impure. The area of the enteric fever is curiously conterminous with the area supplied by the troughs, only one case having occurred outside this area, and that one was a boy who passed by the impure well twice daily and frequently drank the water. On examining the troughs with Dr. Wood, I found below your gates and across the road two large troughs, and a short distance above these troughs another small trough. On inquiry, I found that a stream was known to cross the high road reaching the well-trough from a point about thirty yards higher up. We crossed the road and walked some yards up the road, where we found a clump of cottages. In the midst of them is an open space, and in this space is a pump which is never dry, and the water of which, we have no doubt, is a branch of the stream which supplies the troughs. Now the space occupied by these cottages is the site of an old stone-quarry, which has been filled up with loose earth and rubble. Some parts of this quarry, and, for example, a part now occupied by a privy, had been worked and filled up again within the last ten years. These cottages, therefore, stand in a sort of amphitheatre, sheltered behind by the walls of the quarry. At the back of these premises is a pool supplied constantly by running water; this is, we proved, the main source of the stream which supplies the troughs. This stream runs by several channels through this basin of excavation, the channels themselves then combining to form a main stream which supplies the watering troughs. The basin is filled with porous made earth, upon which again are placed six or eight dwellings, with foul privies, &c. To give some idea of the rapidity of percolation, I may say that on the day of my visit a heavy rain was falling. Surface-water, at the close of the shower, was standing in the hollows of the soil behind the cottages. In less than an hour nearly the whole of this rain-water had disappeared; and, I may add also, a certain sump-hole which receives the surface-drainage, &c.. was never emptied, for 'it emptied itself' by escape into the soil below. This sump-hole lies just above the calculated run of the stream going down to the troughs.

"It appears that the first case of typhoid fever in your district was that of a girl named Lee. She soon fell ill of fever after her return from a village near Wakefield. Lee lives in one of the cottages which are built in the stone-quarry. During the first day or two of her diarrhœa, the dejections were cast into the privies behind the cottages, and upon the made earth. After that time, the people buried these dejections in the loose earth which fills the old quarry, and below which the stream runs to the trough. This case occurred during the winter months, and at a time when much rain was falling. The rain, soaking through the loose ground in the way I myself witnessed, would enter the stream, and would carry with it the whole of the typhoid excreta. These excreta were then carried by the stream itself into the stomachs of the inmates of your household."

The next outbreak which I was called upon to investigate was with Mr. Ellerton, of Aberford, and it occurred at Bramham College, a large school near Tadcaster, under the management of Dr. Haigh and his sons. This report is as follows:—

"On the 10th of May, 1869, I was consulted by you concerning an outbreak of fever which had recently taken place in your establishment. From the evidence which I obtained from Mr. Ellerton, I was satisfied that the fever was of the kind known as enteric. I felt satisfied also that the appearance of enteric fever in the college was due to introduction from without. It appears that, in the latter half of the month of March, nineteen of your boys sickened at once with symptoms that afterwards developed into those of well-marked enteric fever. It seemed clear, therefore, that these boys were subjected to some common cause of disease. My attention was at once directed to your water-supply. A suspicion of the water had already presented itself to Mr. Ellerton and yourselves; and you were exploring the state of your supply. I found that your drinking-water was taken from a surface-well on your premises. Having, then, a well liable to pollution, was any pollution by the specific excreta of enteric fever to be detected? I believe that, with your assistance and the assistance of Mr. Ellerton, I am enabled to answer both these questions in the affirmative. A specimen of the well-water, however pleasant for drinking purposes, was (as shown by analysis) contaminated by sewage-matter. It became important, then, to find the origin of this contamination. In close proximity to your well was a soft-water tank, cemented inside. The cement, however, was shelling off on the side next the well; and that there was soaking going on from the tank into the well was clear from the distinct discolouration which was found on the stonework of the well contiguous to the soft-water tank, and in no other part. It was discovered that the water in the tank was contaminated by sewage matter, by means of a drain formed of sanitary tubing which runs over the top of the soft-water tank on its way from a water-closet to the sewage tank. At the spot where it passed over the tank, this tubing was broken (owing to its having been undermined by rats and so let down), and the whole ground above the arched roof of the tank was saturated with filth. Inside the soft-water tank at the spring of the arch, and just below the broken drain, were found two cracks, through which there were evident traces of the dripping of sewage into the tank. Your well was, therefore, impregnated with sewage through the intermediation of the soft-water tank.

"It only remains now to discover the source of the specific infection. You tell me that at the end of last January you received two boys, who sickened about nine days after their arrival and developed all the symptoms of enteric fever. It is in accordance with the time of the incubation of enteric fever (which is seldom or never less than ten days, and generally more), that these boys should have received the poison into their systems before coming to you, for fever was prevalent in the localities from which these boys respectively came; in fact, enteric fever was present in the home of one of the boys. These boys had the diarrhœa characteristic of enteric fever; and I find that their excreta were thrown down the water-closet generally used in cases of sickness. The broken drain found above the soft-water tank was the drain from the water-closet. The whole case is therefore singularly clear, and the remedy as clear as the causes."

Both these cases tend, I think, to prove with unusual clearness that water charged with sewage-matter had long been drunk daily with impunity, so far as enteric fever was concerned, until the moment when the dejections of an enteric patient passed into it. At Terling the people had long been drinking water horribly charged with organic matter and bowel dejections, and without the fever as a consequence, until one young girl commenced the specific process; her dejections were washed by heavy rains into the wells, and then only did the endemic spread among the people.—*British Medical Journal, March* 26, 1870, *p.* 308.

3.—BELLADONNA IN THE TREATMENT OF TYPHOID FEVER.

By Dr. B. Kelly, Dublin.

Without entering into the fruitless question as to whether fevers be due to specific germs or to pythogenic fluids or gases, all of which, up to the present, have failed to be detected by the microscope and the most searching chemical tests, I would merely state that my own convictions lean strongly to the theory that this class of diseases owe their origin to the introduction into the *circulation of septic* vapours or gases, and that these subtle agents (fomites) are not unfrequently developed on the surface of the bodies of the individuals subsequently tainted by them. Hence the prevalence of these maladies among the poor and all those who from ignorance or other circumstances, ignore the practice of frequent ablutions and personal cleanliness. But more, there must exist, as a *sine quâ non*, a predisposition on the part of the patient, as well as an exciting cause for the effectual production of fever. Now, of all the predisposing elements, there is none, perhaps, more powerful than poverty, with its concomitant train of filth, squalidness, and misery.

The treatment of fever has been as conflicting and diversified as have been the opinions of physicians respecting its pathology. When the inflammatory theory was in vogue, bleeding, blistering, and purging were pressed into service with terrible effect, as shown by the awful mortality which attended this form of treatment. And it has not seldom happened that the disease had been mistaken by a similarity in outward appearance with the phenomena of some local phlegmasia, and doctored accordingly, as we have good reason to suppose, judging from the lesions presented in post-mortem examinations. No one can read the clinical works of Broussais without being seriously convinced of the truth of this statement. Now that the zymotic, or putrid, and germinal theories reign supreme among the more orthodox members of the profession, the antiseptic plan of medication, based, as I believe it to be, upon sounder pathological doctrines, has superseded the more heroic method alluded to, and, comparing the results of both, with decided benefit to patients.

The treatment which I now propose has neither been predicated by the inflammatory nor yet by the zymotic nature of the disease, and consequently cannot be styled either antiphlogistic or antiseptic, at least in the ordinary acceptation of these terms; and yet, viewing it in the light of its action in preventing congestions and inflammations and dissipating the putrid epiphenomena of fever, it well deserves the title of both.

Nearly six years have now elapsed since I recommended, on physiological grounds, belladonna in the treatment of enteric fever. During this time ample opportunity has been given me of testing its therapeutic virtues. Believing firmly, as I did, in the correctness also of the pathological deductions upon which the new treatment was especially based, I entered, I must confess, upon the trial with rather sanguine hopes of success. Never, I can say, have expectations been more fully realised or crowned with happier results. Indeed, the greatest difficulty I now find is to speak of it in such a way as not to detract from its merits by false moderation, or, by falling into the opposite and equally reprehensible extreme, to puff it up with unbounded praise. Suffice it to say that not more effectually is the tetanic action of strychnine on the system neutralised by tobacco and woorari, or paludal fever combated by quinine, or anæmia removed by chalybeates, than is the poison of typhoid counteracted by belladonna. It completely changes the whole character and outward manifestation of the disease. Delirium, coma, and subsultus quickly vanish, and are succeeded by calmness and clearness of the intellect, by natural sleep, and complete control of all the voluntary muscles. Diarrhœa is checked, and healthy consistent evacuations are established. The appetite, if excessive or deficient, is restored to something like a normal standard. The pulse, from being frequent, fluttering, and compressible, is rendered slow, strong, and equable. The morbid temperature of the body—the *calor mordax* of Roman, the *causus* of Greek physicians—falls to a natural level. The vital changes induced in the blood, glandular and other organs, as shown by passive hemorrhages, tenderness of the abdomen, hypostatic congestions, and ulcerations, are all arrested *in limine*; and the deranged functions of the economy return to their original equilibrium, and are performed with the same regularity as in health. The patient, after an inconceivably short space of time, usually from twenty-four to forty-eight hours, after the first administration of the remedy, wakes up, so to speak, and pronounces himself as well as ever; and indeed, to look at him, he really appears so. If, however, the physician be not thoroughly on his guard, and do not keep the patient quiet in bed pending the ordinary course and duration of the disease, serious consequences will almost inevitably follow. This precaution is all the more necessary, as both the patient and his friends often become clamorous, and, unless gifted with more than a usual share of charity and subordination, may impute sinister motives to the ill-starred medical attendant. Under such circumstances he should never neglect to impress upon them the important fact that, favourable appearances to the contrary notwithstanding, the disease must run a certain limited course; and that relapses, always dangerous in themselves, are only to be prevented by watching the patient closely and combating untoward symptoms as they arise. These tactics I have never known to fail. Now a word as to the proper time and mode of administering belladonna.

When called to see a patient in fever, I usually wait, if it be yet in its incipient stage, till all or most of the prominent symptoms are well developed before I venture to prescribe the drug. By doing so, I have the advantage and gratification of witnessing its effects in all their physiological force, while I avoid the possibility of making a mistake in diagnosis. If the patient be an adult and vigorous, I do not hesitate to give from twenty to twenty-five drops of the officinal tincture of the British Pharmacopœia every four hours. This dose must necessarily vary to suit individual ages and constitutions. The following is the formula I generally employ:—℞. Tinct. belladonnæ ʒ ij., syrupi aurantii ℥ ss., aquæ menth. pip. ℥ vijss. Ft. mist. Dosis: Pars sexta omni quartâ horâ sumenda. As the whole of this mixture is usually consumed in twenty-four hours, and as it is repeated with little or no variation day after day, for generally not less a period than two weeks, we may well imagine the enormous quantity of the narcotic that may be used with impunity, especially when the system is fully under the influence of an agent like the poison of typhoid fever. I have never known anything more serious than moderate dilatation of the pupils (which I look upon as an admirable criterion of the safety of its therapeutic action) and slight dryness of the fauces to attend its administration.

The most remarkable effects of belladonna, perhaps, are shown by the suddenness with which the patient recovers his intellectual faculties and the full power and control of his muscles. The latter he often takes pleasure in exercising by rapidly flexing and extending his arms—a circumstance which he adroitly wields as an argument in his appeals to the physician to allow him to get up and resume his ordinary vocation. All this was well exemplified in a stalwart Englishman, a patient of Dr. Samuel Giles, of New-cross, Deptford, whom I attended as *locum tenens* a little over a year ago.

As belladonna completely prevents the specific lesions in all the tissues and organs of the body naturally consequent upon the absorption of the typhic poison, it becomes an important question to decide whether the patient is rendered obnoxious or not to subsequent attacks. This is an enigma which neither experience nor observation, so far, has enabled me to solve. Reasoning, however, from analogy, we may expect the disease to reappear, if at all, under a modified and milder form.

When is it safe to withhold the belladonna from the patient? As nervous symptoms, resembling those following the sudden suspension of an habitual stimulant, are apt to supervene upon the abrupt cessation of the drug, I deem it prudent, after the disease has continued about twenty-one days, and the eruption and other accidents have entirely disappeared, to diminish the dose and extend the intervals of its exhibition gradually. This may be safely and conveniently done during the whole period of convalescence.

As regards the matter of stimulants, I absolutely interdict them in every form and shape to patients while under the treatment of belladonna, as one of my objects is to see that neither its action is masked, nor its virtues rendered doubtful, by the complexity of remedial agents. I occasionally permit a teaspoonful or two of milk punch to be given at long intervals, certainly not with a view of thereby benefiting the patient very materially, but as a *placebo* covertly addressed to the minds of over-anxious friends.

The regimen of patients, while under treatment, should be attended to with the most scrupulous care, as the slightest excess, either in eating or drinking, *is sure to* be followed by an attack of indigestion and an aggravation of al the febrile symptoms. I have found the following bill of fare to answer admirably in most cases:—A quart of soup made from cow-heel and a pound of beef; a pint of milk boiled with arrow-root; an ounce of cocoa prepared in a pint of milk. These, together with a slice of toast, and a little salt and pepper, constitute the ordinary daily rations for an adult. The proportions must of course vary in many cases, but the articles themselves will be found well adapted to the debilitated powers of digestion commonly arising in the course of continued fever.—*Medical Times and Gazette, Feb.* 5, 1870, *p.* 146.

4.—ON RELAPSING FEVER.

By Dr. Charles Murchison, F. R. S., Physician to the Middlesex Hospital.

[For many years this fever has been unknown in Britain. The first case for fifteen years was admitted in July, 1868. Since August, 1869, it has spread rapidly. Although the fever is undoubtedly contagious, and probably was imported from Germany, it is the very poorest of the population only who are attacked with it.]

It is with the symptoms of the disease that we are at present more especially concerned. The prominent symptoms, then, of relapsing fever are: pyrexia, setting in suddenly, with rigors or chilliness; great frequency of pulse and heat of skin, but no specific eruption; severe headache and general pains, but mind usually clear; pain, tenderness, and enlargement of the liver and spleen; rapid breathing; vomiting more or less urgent, and frequently slight jaundice and constipation: an abrupt cessation of these symptoms about the fifth or seventh day, with copious perspiration; but after a complete apyretic interval, during which the pulse may be unusually slow, and the patient may have a good appetite and be up and walking about, an abrupt relapse on or about the fourteenth day from the first commencement, or sometimes later, running a similar course to that of the first attack, but terminating on or about the third or fourth day of the relapse. The disease is very rarely fatal, except in persons whose constitutions are weakened by previous illness; but it is a much more painful malady than typhus, which so commonly ends in death. Such is the clinical history of relapsing fever in a typical case. There are many variations as regards the duration of the febrile paroxysms.—*Lancet, Jan.* 22, 1870, *p.* 109.

5.—ON SCARLATINA.

By Dr. Walter Fergus.

[Whenever an epidemic of scarlatina occurs the cry of the public at once is for better sanitary arrangements, improved drainage, better water supply, &c. If, however, we turn to the Ninth Report of the Medical Officer of the Privy Council, we find returns from twenty-four towns, widely spread and differing from each other in many social as well as sanitary respects, and these reports prove beyond doubt that the sanitary precautions named are perfectly inoperative in preventing the spread of scarlatina.]

I propose in this paper to put together some facts relating to scarlatina, which have come under my notice in a somewhat extended observation of that disease.

In the first place, I would observe that popular notions, preconceived ideas, and theories hastily adopted, and perhaps enforced with authority, are not likely to lead to a true solution of the mystery which attaches itself to scarlatina above all other diseases.

An outbreak of scarlatina takes place. At once bad drainage, insufficient nourishment, overcrowding, or some such defects, are said to be the cause, not only of the spreading of the disease, but of the disease itself. It is not too much to say that defective sanitary arrangements are universally held to be a cause of scarlatina. Valuable beyond price as these improvements are, in regard both to the general health and to the social and moral well-being of the population, they are proved to be inoperative in arresting the development and march of scarlatina. To make this point unequivocally clear, we have only to turn to the Ninth Report of the Medical Officer of the Privy Council. There we find returns from twenty-four towns, wide spread and differing from each other in many social as well as sanitary respects. One uniform testimony is borne to the utter powerlessness of improved drainage, better water-supply, and every other sanitary improvement in respect of scarlatina. Taking the aggregate of the towns since the introduction of sanitary improvements, there has been an increase in the scarlatina death-rate of upwards of 1 per 10,000 of the population. [An accompanying table shows at a glance what has been the mortality from this disease before, during, and after the execution of the works.] In 11 of the towns, during the progress of the works, scarlatina *decreased*, and in 12 it *increased*. The average decrease was only 4·31, while the increase averaged 8·85. After the works had been completed, and in operation for from four to eight or nine years, the scarlatina death-rate increased in 13 of the towns to the amount of 71·26 deaths, giving an average of 5·5 for each town; on the other hand, it decreased in 10 towns to the amount of 32·57, averaging for each 3·25. At Rugby no change has taken place. Salisbury, with a decreased death-rate of 20 per cent., has an increase of 300 per cent. of deaths from scarlatina. Ely, with a saving of 14·50 in general deaths, loses 220 per cent. more from scarlatina. Leicester has 4·50 fewer deaths from general causes yet increases the scarlatina death-rate by 180 per cent. Cardiff saves 32 per cent. in its general mortality, but has an increase of 90 per cent. from scarlatina. Bristol and Clifton have fewer deaths, but those from scarlatina are increased by 43 per cent. Worthing, also, increases its scarlatina death-rate by 105 per cent., with a small saving of the general death-rate. Chelmsford, where the general mortality increased, notwithstanding sanitary improvements, to the amount of 9·50 per cent., shows an increase of deaths from scarlatina of 280 per cent.

If we look to the towns where a diminution of the scarlatina death-rate has occurred, we find that in many of them the lessening took place after a great increase that had arisen while the works were in progress. At Penrith, for eight years before any works were undertaken the deaths from scarlatina averaged 3·33; during the three years that the works were in progress they rose to 28·33; for the nine years following the completion of the works they fell to 1·83. At Morpeth, the scarlatina mortality rose from 13 to 19 during the works, falling to 7 after their completion. But a large increase during the progress of the works is not always followed by a remission on their completion. At Salisbury, before any works were commenced, the scarlatina mortality was 2·25; it rose to 12·33 during the works, and remained at 9 after their completion. Carlisle shows the largest mortality from scarlatina: before the works it was 15·50; while the works were in progress it rose to 18·75; after they were completed it fell to 11·75. In a note it is observed that "scarlatina came at Carlisle, previous to 1854, in two tremendous epidemics lasting about two years each, and after each epidemic there was a year without a single scarlatina death; while since 1857 it has never been wholly absent, but has never in one year caused a mortality approaching that of the former period." This fact is of importance in the present inquiry. At Ashby-de-la-Zouch, the most remarkable change has taken place in the prevalence of scarlatina as a mortal disease. Before any sanitary improvements were made the mortality from it was 0·75; during the works it rose to 10·50; and for ten years after their completion it averaged 8·33. The works effected at Ashby were as follows:—"Drying of subsoil, through sewerage by pipes, partial substitution of waterclosets for middens. New ample supply of water in lieu of bad water from surface wells; but a few wells still used. Better paving and cleansing. No overcrowding at any time." Population in 1861, 3840.

The latest date to which the Report reaches is 1865. It will be interesting *to watch the* prevalence of scarlatina at subsequent periods. According to the analogy of the disease, it is probable that those places which were worst up to 1865 may be more free during the succeeding decade.

Turning from the Ninth to the Eleventh Report of the Medical Officer of the Privy Council, we meet there with a carefully prepared paper by Dr. Ballard, on the health of the parish of Islington for twelve years, from 1857 to 1868 inclusive. This period takes in no less than four severe visitations of scarlatina—viz., in 1859, 1863, 1867, and 1868. His observations lead to the following inferences: 1. A mean atmospheric temperature of about 60°, or between 56° and 60°, is that most favourable to the outbreak of scarlatina. 2. That for its free development it is necessary that the humidity of the atmosphere shall not much exceed 86, or be much less than 74. 3. That a higher temperature than 60° does not seem to be in itself unfavourable to the spread of the disease. 4. That a fall of mean temperature below 53° tends to arrest an epidemic of scarlatina. *At all seasons* of the year, but more especially in the winter and spring, its extension is favoured by a temperature above the average of the season. At all seasons, *except the autumn*, a dry as well as warm atmosphere is calculated to promote its epidemic prevalence; in *autumn*, the wetter and warmer seasons were those which proved most favourable to the extension of the disease.

In connexion with the question of atmospheric influences it is a curious fact that scarlatina is almost unknown in the Scilly Isles, with a population of over 2000. These islands also enjoy a remarkable immunity from small-pox, measles, and diphtheria.

Scarlatina, baffling as it does the ordinary sanitary measures, deserves all the more consideration in the subject of its treatment. It is undoubtedly true that some forms of the disease mock the best-devised methods of treatment, but these cases are happily rare. As the malady generally presents itself, few diseases yield to treatment more satisfactorily. The chief point is, not to be overmuch afraid of your enemy, and to put a *quasi* faith in the issue of the battle being on the side of recovery. Medicines easily become poisons in this disease; a smart purge or a repeated emetic not unfrequently changes a moderate and regular attack into one of peril, increasing the danger of all the symptoms. Next to a good supply of air and a comfortable bed, *quietness* is of the utmost consequence; a fussy nurse or over-anxious parents turn the scale against a patient with unerring certainty. Everything about a sufferer from scarlatina should be as quiet and as cheerful as it is possible to make it. An emetic of sulphate of zinc and ipecacuanha wine, in the *earliest* stage of the disease, is of use, helping as it generally does reaction; but it should not be repeated with a view of cutting short a disease which *will* run its course. If the patient can be kept alive for from seven to nine days, he will most probably make a good recovery. After the emetic, the patient should be allowed to sleep as much as possible; the more he sleeps on the first two or three days of the attack the better in all probability will be the result. At the end of that time, in most cases, all sense of depression or oppression will have passed away, and, quietness being maintained, an uninterrupted recovery ensues. Two remedies have proved almost equally useful: chlorine gas in a sweetened solution is most grateful to the patient, and evidently helps him in his battle; but a better medicine is the liquor of acetate of ammonia, with a considerable excess of carbonate of ammonia, with ten minims of the spirit of nitric ether in each dose. It should be given in doses repeated with greater frequency in severe cases. Gargles are useful in cooling and relieving the throat: a weak solution of chlorine gas sweetened, or of Condy's fluid, answers well as a gargle. It is a good practice to make a patient gargle before taking food or medicine. Nitrate of silver or strong hydrochloric acid must be used if there is much blocking up of the fauces, or grey patches on their surface. Ice is of immense use where there is either great throat affection or sickness. The pleasantest drink is soda water given freely, with wine added where wine is required.

The disease seems to produce a stretching or distension of every soft fibre and structure of the body. All treatment should be directed to the restoration of tone to the distended and weakened structures; with this view iron and quinine may be given early in the attack. From the fifth or sixth day six grains of the sulphate of iron, magnesia, and quinine[*] should be given *with* the ammonia draught. This mixture may be continued till convalescence is complete. Towards the end, in many cases, the sulphate of iron, magnesia, and quinine may be given alone in from fifteen to twenty grain doses. In this form iron and quinine rarely disagree with a patient, and aperients are seldom required during its use. The external treatment is of great importance; rapid sponging with vinegar and water is called for if the patient does not sleep, or if there is much irritation of the skin. In cases with extreme development of the rash and burning skin, the cold douche, rapidly given, acts like a charm. The patient, placed in a sponging-bath close to the bed, has four to five washhand basins of cold water poured in quick succession over him, is quickly rubbed dry, and put to bed, when, if the treatment has done good, he drops off to sleep almost at once. Warm baths early in ordinary cases do harm, nor should they be used until a certain amount of restoration of tone has taken place. Anointing with fatty substances early in the disease is not likely to benefit the patient; it may arrest to a certain extent the diffusion of the separated cuticle. Scrubbing a patient with carbolic soap in a bath ought to be postponed till a very late period of the disease. Before the restorative stage is reached, every exertion on the part of the patient should be avoided. Close stools near to the bed should be provided, and kept always charged with a disinfectant. If a warm bath is given, it should be brought close to the bed, and the patient ought not for any purpose to leave his bedroom till he has recovered his strength and appetite.

In none of the cases treated on the plan indicated has there been a disposition to the formidable sequelæ of scarlatina. In many of the cases albumen appeared in small quantity from the fourth to the sixth day, uniformly disappearing in from three to four days. Albuminuria was more frequent in the cases treated with chlorine gas, which was on that account finally abandoned for the ammonia and tonic treatment.

A well-regulated and sufficient diet; with a change of air, as soon as a removal is prudent, completes the recovery. Occupation, especially mental occupation, must be cautiously resumed. The brain, as much as any other organ, suffers from the stretching process of scarlatina. Early in the disease, books, conversation, light, and loud noises should be avoided. Long after recovery the brain frequently shows signs of slow restoration of power.—*Lancet, Nov.* 20, 1869, *p.* 702.

6.—ON A CASE OF MALIGNANT SCARLET FEVER.—DEATH IN FORTY HOURS.

By J. J. Thompson, Esq., Surgeon 2nd Batt. 9th Regiment.

[The following case occurred in the garrison at Warley Barracks, Essex.]

The case which has come under my observation is remarkable, as showing how rapidly fatal the malignant form of scarlet fever may prove in a young and otherwise healthy man. Such was the intensity of the blood-poison in this instance that the man seemed suddenly struck down by it, and the case was evidently hopeless from the first. As has been so often noticed by other observers, the urgency of the local throat affection was by no means proportionate to the virulence of the constitutional phenomena.

On Thursday evening, Feb. 10th, 1870, at six o'clock, a young recruit from the depôt brigade of Foot Guards, in garrison at Warley, reported himself sick, and was at once admitted to hospital. He had been quartered at Warley since December last, and had the appearance as well as the character of being a strong and healthy man. He attended his usual drill the same afternoon

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[*] The magnes. ferri et quinæ sulph., as sold, contains, in twenty grains, one grain of sulphate of quina, three grains of sulphate of iron, and sixteen grains of sulphate of magnesia. In the form of powder it keeps well for a long time, without oxidation of the iron.

(Thursday), and it was merely remarked by the drill corporal that he was not as smart as usual. There is no history of contagion, and the period of incubation must be conjectural.

On admission, he complained of his throat being very sore and of a general feeling of illness. When seen directly afterwards, he was lying on his back, low in the bed; his face was congested; eyes suffused; pulse small and frequent; and his tongue was covered with a dirty, creamy coat.

Next morning (Friday) the constitutional symptoms were of a marked asthenic character; pulse 120, feeble and quick; tongue dry and brown in centre; face of a dusky leaden hue, and the abdomen and chest were covered with a dusky red efflorescence; the fauces, uvula, and tonsils were livid and swollen. Towards the evening he became worse, and during the night delirium, not of a violent character, was incessant, and he died at ten o'clock on Saturday morning, about forty hours from the time of his admission.

Wine and beef-tea were freely given from the first, as well as chlorate of potash and diffusible stimulants.—*Lancet*, *April* 2, 1870, *p*. 478.

7.—REMARKS ON THE NATURAL HISTORY OF RHEUMATIC FEVER.

By Dr. William W. Gull, D. C. L., F. R. S., and Dr. Henry G. Sutton.

[The following report is founded upon twenty-five cases of rheumatic fever, all of which have been carefully watched by the authors.]

The acute symptoms terminated in these cases respectively on the 11th, 11th, 12th, 4th, 8th, 6th, 15th, 20th, 5th, 12th, 7th, 21st, and 3rd day. The average duration of the acute symptoms, therefore, in the thirteen cases was ten days.

In the first series of cases, under the care of Dr. Gull, treated for the most part with mint-water only, which we have published in vol. xi, of Guy's Hospital Reports, 1865, the average duration of the acute symptoms was 8·5 days.

In the second series, published in vol. xii, Guy's Hospital Reports, 1866, the average duration of the acute symptoms was 9 days.

And in this our third series of cases, as we have stated above, the average duration was 10 days.

There is, therefore, a difference of one day and a half only betwixt the three series of cases, the average of these three being 9·1 days.

This, we believe, will usually be found to be about the length of time that the acute symptoms generally extend over in cases of rheumatic fever, where there is no severe heart disease.

In the third series of cases, as we have just stated, the average duration of the acute symptoms was calculated at 10 days, whereas in our first series of cases it was 8·5 days. This difference may be explained when we state that much greater care was taken in estimating the duration of the acute symptoms in the third series of cases than in the first. In the third series the temperature was taken every morning and evening, and until this was found to be normal the acute symptoms were not considered to have ceased. It not unfrequently happened that the tongue was clean and the patient was free from pain, but the temperature was higher than normal; in such cases, guided by the thermometer, we have concluded that the acute symptoms had not terminated. Whereas in the first and second series of cases, where the thermometer was not used, when the tongue was clean, the skin felt cool, and the patient was free from pain, the acute symptoms were regarded as having ceased. Had the temperature been taken in the first and second class of cases, we believe the average duration of the acute symptoms would have been about 10 days instead of 8·5 days.

The total duration of the acute symptoms, including the time that the patient was ill before coming into the hospital, was respectively 19, 15, 18, 9, 9, 14, 28, 31, 22, 10, 24, and 25 days, and the total duration of the acute symptoms—that is, from their commencement to their cessation—was, on an average, 19 days.

We now proceed to ask—Is the duration of rheumatic fever longer when it is treated on the expectant plan, or when it is treated by drugs? We very much regret that, owing to the arrangement of Dr. Dickinson's paper (Med.-Chir. Transactions, vol. xlv, on "The Treatment of Rheumatic Fever,") we could not compare his cases with our own. In Dr. Garrard's cases (Med.-Chir. Transactions, vol. xxxviii), treated by large doses of alkali, the male patients were, on an average, in the hospital 6·2 days before the acute symptoms subsided, and females were 7·3 days before the acute symptoms subsided. The average of the two was 6·75 days.

In Dr. Herbert Davies' cases (London Hospital Reports, vol. i), treated by blisters, the duration of the acute symptoms, while the patients were in the hospital, was, on an average, 8·4 days.

When, however, we take the thermometer as a guide, we find in Dr. Herbert Davies' cases that, although the patients were free from pain, and the joint symptoms had also subsided, on an average, in 8·4 days, yet the temperature of the body was not normal until, on an average, 9·5 days.

In Dr. G. Owen Rees' cases (Guy's Hospital Reports, vol. xii, 1866), treated by lemon-juice, the duration of the acute symptoms in the hospital was 6·8 days.

And under the expectant treatment the duration of the acute symptoms in the hospital was 9·1 days.

To give this evidence more briefly, under the full alkaline treatment the average duration was	6·75	days.
Lemon-juice ditto	6·8	"
Blister treatment ditto	8·4	"
Expectant treatment ditto	9·1	"

There was, therefore, a difference of a little more than two days in favour of the full alkaline and lemon-juice treatment, and the average in the blister and expectant treatment was almost equal.

When, however, the duration of the acute symptoms was tested still more accurately by the aid of the thermometer, we find that under the blister treatment it was, on an average, 9·5, under the expectant treatment 10 days.

The total duration of the acute symptoms, including the time the patients were ill before and after going into the hospital, was—

Under the full alkaline treatment	13·5	days.
Under the blister treatment (not estimating by aid of the thermometer) was	15·7	"
When the acute symptoms were estimated by the thermometer the duration was (under the blister treatment)	17·27	"
Under the expectant treatment	19·0	"

These differences are very slight, so much so that they appear to us to argue that one plan of treatment (as regards shortening the duration of the rheumatic process) has no great advantage over the other. Probably it will be admitted that no great importance should be attached to the fact that under one plan of treatment the duration of the acute symptoms was a day or two less, for every physician is well aware how difficult it is to fix the period when the acute symptoms have just ceased, so as not to be a day before or after the time when they have really subsided; for patients differ very much in estimating their own pain, and we therefore have to deal with all the uncertainty of subjective symptoms. It can, perhaps, be readily understood that one practitioner might consider a patient had lost all his acute symptoms to-day, whilst another practitioner, guided by the fact that the tongue was almost though not quite clean, that the patient was practically although not absolutely free from pain in the joints, might consider that the acute symptoms had not quite subsided, and then allow another day or two to pass over before he decided that the acute symptoms had ceased. Bearing this in mind, it appears to us that we cannot attach much importance to this difference of one or two days.

We therefore submit that there is no evidence to show conclusively that alkalies, lemon-juice, or blisters, curtail the duration of the rheumatic process. And we agree with Dr. Barclay, when (on Gout and Rheumatism, p. 32), speaking of the administration of alkali in rheumatic fever, he states, "We are not yet in a position to say that it exercises any influence in curtailing the duration of the disease."

With respect to lemon-juice also, we are not satisfied that it has any such power.

We have witnessed the trial of Dr. Herbert Davies' blister treatment in a few cases which have occurred in Guy's Hospital, under the care of Dr. Wilks and the late Dr. Barlow, also in cases which have occurred in the London Hospital, and it has appeared to us to relieve very much the pain and sufferings of the patients in some cases, but it has not appeared to curtail the rheumatic process. We noticed that, although the temperature of the body fell during the application of the blisters, yet it did not immediately return to its normal standard. It remained higher than normal for some days after the pain had abated, nor in several cases did the tongue become clean, the appetite return, nor the urine fall in specific gravity, as usually happens when the rheumatic process is really over. Moreover, Dr. Davies' cases do not show, when compared with those here recorded, any decided evidence in favour of the blister treatment beyond the fact that the blisters appear to have given much and speedy relief to the pain in the joints. We therefore regard the application of blisters as a valuable agent in relieving the sufferings of the patient, but we are unable to say that it curtails the duration of the rheumatic process.

Our cases appear to us to teach that the rheumatic process runs its course under the expectant plan as favourably as under the treatment by drugs.

While it has been admitted by those who advocate the treatment of rheumatic fever by alkalies, that large doses of such drugs do not curtail the duration of the disease, nor bring very great relief to the patient, yet it is stated, to quote the words of Dr. Barclay, "that it does most incontestably prevent inflammation of the heart," and he further states "that the proportion of heart ailments is very much reduced by the employment of the alkaline treatment."

We now propose to inquire what evidence there is to support this statement?

We may now pass on to show what was the state of the heart in those cases where there was well-marked disease of that organ. In thirteen of these twenty-five cases there were physical signs indicating organic disease of the heart, particulars of which may be briefly given as follows:—It may be noticed that in every one of these cases the heart was more or less organically diseased when the patient was admitted into the hospital. In five of these thirteen cases there were physical signs of pericarditis on admission, and in three of the five there was a mitral bruit when the patients were discharged from the hospital. In a fourth a systolic aortic bruit was heard, and in the fifth case the heart was healthy when the patient was discharged. In one patient the first sound was prolonged at the base on admission, subsequently pericarditis and pneumonia supervened, and the heart was healthy when the patient was discharged from the hospital. In three patients there was a mitral murmur on admission and when discharged from the hospital. In one there was an aortic obstructive bruit on admission and when discharged. In one the cardiac dulness was normal; the first sound was prolonged at the base on admission, and a mitral bruit existed when the patient was discharged. In one case there was a systolic bruit at the base on admission, and at the apex when discharged. In one case the apex beat was unduly marked, and there was præcordial pain on the day after admission; a new-leather-creaking bruit subsequently developed itself, and the patient died. Besides these cases, in which there was well-marked organic disease of the heart, there were twelve others in which there was no evidence of organic disease of the heart, but there was in nearly all more or less evidence of functional disturbance of this organ, or of changes in the blood producing so-called anæmic bruits. And in one or two cases the physical signs were such as might be said to indicate slight disease in the pericardium. These indications were, however, so slightly marked that it would be a matter of dispute as to whether they did or did not indicate morbid changes in the tissues of the heart. Not one of these patients had disease of the heart when discharged from the hospital.

The particulars of the twelve cases may be briefly summed up as follows:—In one case there was no bruit, but the heart's action was unduly marked. In one case there was a systolic, apparently an anæmic, bruit at the base on admission and when discharged. In one case the first sound was prolonged on the day of admission; on the seventh day a bruit was heard over the base, which afterwards entirely disappeared. In one the apex beat was unduly marked on admission, and on the third day a bruit was heard, and the heart was healthy when discharged. In three cases the cardiac dulness was somewhat increased, and a systolic bruit was heard over the base when admitted, but it was indistinct when the patient was discharged in one of the three cases, and there was a systolic bruit at the base on admission, and the heart was healthy when discharged, in two of the three cases. In one case there was a systolic bruit at the base on admission, and the cardiac dulness was somewhat increased on the third day, and the heart was healthy when the patient was discharged. In one case a bruit was heard at the apex of the heart, which afterwards disappeared. In one a new-leather-creaking sound was heard, and the heart was healthy when discharged. In one the first sound was prolonged and the dulness increased on admission; afterwards a bruit was heard, and the heart was healthy when the patient was discharged. In one there was a bruit at the base on admission, and the first sound was prolonged when the patient was discharged from the hospital.

These details concerning the heart show that when rheumatic inflammation attacks the heart, and is allowed to run its natural course, the pericardium may become very extensively diseased, and yet the valves of the heart may escape, but in other cases in which there is pericarditis the valves may become diseased and rendered incompetent. Nor does it follow, because the pericarditis is severe and extensive, that the valves of the heart will certainly become diseased, but in the majority of cases in which there was severe pericarditis, the valves did become involved.

Again, the cardiac dulness may be somewhat increased and extend higher than normal, and the first sound may be prolonged at the base. This prolonged first sound may develop into a bruit, and be followed by well-marked mitral disease. In other cases there may be a similar increase of cardiac dulness, and a new-leather creaking sound may be heard at the base of the heart, and this may subside and the heart remain healthy. Further, a prolonged first sound may be heard over the base of the heart, and this may develop into a systolic bruit, and afterwards entirely disappear, leaving the heart healthy. A slight bruit may be heard over the apex of the heart, and afterwards it may completely disappear and the heart remain healthy.

It is instructive to notice that there was more or less modification of the heart sounds during some period of the attack in every case except in one. In only one case did the heart sounds remain perfectly healthy throughout the entire disease. But in eleven cases the abnormal sounds were such as are not usually considered to indicate any organic affection of that organ, and these abnormal sounds subsequently totally disappeared, and there was no evidence of cardiac disease when the patients were discharged from the hospital.

We now proceed to ask the question—If the heart was healthy when the patients were admitted into the hospital, was it common for it to become diseased while the patients were under treatment by mint-water in the hospital?

Our cases show that when patients free from heart affection were admitted into the hospital suffering from rheumatic fever, and the disease was allowed to run its natural course uninfluenced by drugs, it was a very rare thing for the heart to become diseased while the patients were under treatment in the hospital.

Ordinarily patients suffering from rheumatic fever do not enter the hospital until the disease has been going on some days, usually about six or eight days, and in a great number of cases the heart has already become diseased before entering the hospital. If, however, the patients were in the hospital at the commencement of the disease, we should probably more frequently observe the heart become diseased while they were under treatment. One patient, therefore, that was in the hospital from the first to the last of the rheumatic fever ought not to be compared with the cases that have suffered from rheumatic fever for some days before coming under observation.

Our cases of rheumatic fever, therefore show that of twenty-five patients suffering from a first attack of this disease, twelve had organic affection of the heart on admission into the hospital.

In one patient who was in the hospital from the commencement of the attack there was some, but very doubtful, evidence of heart disease on admission into the hospital, and pericarditis supervened while under treatment. In another patient there were no physical signs of heart disease on admission, but there was great distress and pain in the chest. Forty-eight hours after admission there were indications of pericarditis in this case. In eleven cases there was no organic disease of the heart on admission, and none supervened while the patients were under treatment.

Our cases further show that where there was no evidence of organic disease of the heart on admission into the hospital, the heart was free from all evidence of disease when the patients were discharged from the hospital. Not one of our patients came into the hospital without heart disease and left the hospital with evidence showing that the heart was diseased.

The experience gained in these cases of rheumatic fever which were allowed to run their natural course uninfluenced by drugs, tends to prove that, if patients are admitted into the hospital suffering from a first attack of rheumatic fever, and the heart is not diseased on admission, it will very rarely become organically diseased while the patient is under treatment.

It is rare for the heart to become diseased when the disease is allowed to run its course uninfluenced by drugs, and, judging from the evidence before the profession, it is also rare for the heart to become diseased when rheumatic fever is treated by drugs.

In support of the latter statement we may be permitted to bring forward the following evidence:—Dr. Garrod, speaking of the alkali treatment in rheumatic fever (Med.-Chirurgical Transactions, vol. xxxviii, p. 151) says, "I cannot help thinking that an effect is likewise produced on the cardiac disease to a very considerable and important extent." In no case did the affection of the heart ensue after the patient had been more than forty-eight hours under the influence of medicine.

The statistics of Dr. Dickinson (Med.-Chir. Trans., vol. xlv, p. 350) show that in forty-eight patients subject to the full alkaline treatment only one had pericarditis commencing after treatment had begun.

Dr. Herbert Davies, speaking of the treatment of rheumatic fever by blisters (London Hospital Reports, vol. i, p. 300), says, "In no case where the heart was sound at the time of admission did any organic lesion subsequently develop itself."

Dr. G. O. Rees also has informed us that when cases of rheumatic fever were treated with lemon juice it was exceedingly rare to find the heart become diseased during treatment, provided it was healthy when the patient was admitted into the hospital.

Dr. Basham, in his paper on "The Treatment of Rheumatic Fever by Nitrate of Potash" (Med.-Chir. Trans., vol. xxxi, p. 14) gives, in a tabular form, an account of seventy-nine cases of this disease. One of these cases was probably not rheumatic fever, making the number seventy-eight cases, all of which were treated by nitrate of potash.

In sixty-one cases there was no heart disease. In twelve cases there was no heart disease on admission, and in only five cases did the heart become diseased while under treatment.

The experience, therefore, of these several physicians in cases of rheumatic fever is, that it is rare for the heart to become affected while patients are under treatment in the hospital; that in nearly all the cases where there was heart disease it had commenced before the patient was admitted into the hospital.

It is difficult to understand how remedies so different in their nature and in their actions should all work in such a manner as to bring about the same result—how the administration of large doses of alkali should produce the same result as the application of blisters to the joints.

It may be said that the operation of alkalies, lemon-juice, and blisters, are different, but that they all accomplish the same end by either neutralising or eliminating the poison or the materies morbi of rheumatic fever. But can we reason in this way without begging the question? For it is not proved that there is a poison or materies morbi to be either eliminated or neutralised, and if we propose a theory to explain how these different remedies destroy the theoretical materies morbi it appears to us that we are only making a theory to explain a theory.

Seeing, therefore, that the heart rarely became affected when the rheumatic fever was not treated by drugs, we are compelled to ask the question—What evidence is there to show that any of the different plans of treatment which are advocated have any decided power in preventing the heart becoming diseased?

It appears to us that there is not sufficient evidence to prove that any of the systems of treatment have power to prevent the heart becoming diseased; and in concluding that the treatment has prevented the heart becoming diseased, physicians have overlooked the fact that there might be no tendency at the time that the patients were under treatment for the heart to become diseased, and our cases show that the good results which have been attributed to the influence of the remedies also occurred when no special remedies were used.

Our cases, therefore, tend to teach that these good results were due, not to the drugs, but to the natural course of the disease.

Before we conclude that it was something connected with the natural course of the disease which prevented the heart becoming diseased while the patients were under treatment in the hospital, it is necessary to ask, was there not something common to all these different plans of cure which prevented the heart becoming diseased, and was this something not present in the blister, in the alkali, the acid, and in the expectant plan of treatment?

The only things, perhaps, which were common to all these modes of treatment were rest and regulated diet.

Then the question arises—Are rest and regulated diet sufficient to explain this immunity from heart disease? It appears to us that they are not sufficient. For patients suffering from a primary attack of rheumatic fever have had well-marked symptoms of that disease for some days before coming into the hospital, and the heart has been organically diseased on admission, yet these patients have rested and lain in bed some days and even weeks before entering the hospital. Again, other patients have not rested while they were suffering pain in their joints and had other symptoms of rheumatic fever, and yet on admission into the hospital with a primary attack of rheumatic fever the heart has been found to be free from disease.

It would appear, therefore, that rest and regulated diet are not alone sufficient to explain why the heart rarely becomes affected when the patients are under treatment in the hospital.

We shall now pass on to point out evidence which tends to show that when the heart becomes diseased in rheumatic fever it does so at an early stage of the disease, and if the heart does not become diseased during the first week of the rheumatic fever it rarely does so afterward.

In order to do this it is necessary to show, when patients labouring under a primary attack of rheumatic fever were admitted into the hospital with heart disease, that such disease had set in during the first week of the fever.

[Then brief particulars are given of cases, showing that it is in the early part of a case that the heart becomes affected.]

These eight patients were placed under the mint-water treatment; the *rheumatic fever* was, therefore, allowed to run its natural course.

All these patients were admitted into the hospital during the first week of the fever free from organic disease of the heart, and while they were under treatment during the second and subsequent weeks of the seizure no heart disease came on. In not one instance did the patient escape heart disease during the first week of the rheumatic fever and contract such disease during the second or later weeks of the fever.

If the heart were not diseased in the first week it did not become diseased in the second or in the later weeks of the rheumatic fever.

It will be instructive now to inquire if what we have stated respecting the heart becoming diseased in the first and not in the second week of the rheumatic fever in anyway explains why the heart did not become diseased when patients were in the hospital and treated by alkalies, lemon-juice, blisters, or by the expectant plan.

The explanation would, according to what we have shown, appear to be that patients suffering from rheumatic fever are not, as a rule, admitted into the hospital until the period when the heart is liable to become diseased has passed over. Experience teaches that the heart becomes diseased at the very outset of the rheumatic fever, before the patients enter the hospital, and if the patients pass the first few days of the rheumatic fever without the heart becoming involved, then they do not contract heart disease during the later part of the rheumatic attack.

Some patients treated by mint-water entered the hospital as early as the third, fourth, and fifth day of the rheumatic fever, without any heart disease and the heart did not become diseased while the patients were under treatment.

Some patients treated by blisters or by alkalies, entered the hospital as early as the third, fourth, and fifth day, without any heart disease, and the heart did not become diseased while the patients were under treatment. The same thing occurred, therefore, when the disease was allowed to run its natural course as occurred when the disease was treated by blisters or alkalies.

In our cases treated by mint-water the rheumatic fever commenced, on an average, eight days before the patients entered the hospital.

We may now briefly sum up the various conclusions arrived at in this paper as follows:—

1. That any rheumatic fever uncomplicated with any very severe heart affection tends to run its course in nineteen days, calculating from the time the rheumatic symptoms first set in to their termination.

2. That the average duration of the acute symptoms while patients were in the hospital and free from very severe heart complications was nine days.

3. That in nearly all the cases referred to in this paper, there was some modification of the heart's sounds during some period of the rheumatic attack.

4. That severe pericarditis complicated with pneumonia may subside and leave the heart healthy, so far as we can test by our present means, without the aid of any drug.

5. That when the heart was healthy on admission into the hospital, it was very rare for it to become organically diseased while the patients were under treatment by mint-water, or, in other words, when the rheumatic fever was allowed to run its natural course.

6. That the evidence before the profession shows that the heart very rarely became diseased while the patients were under treatment (in the hospitals). And that this was the case when the patients were treated by alkalies, lemon juice, or by blisters to the joints.

7. That there is not sufficient evidence before the profession, to prove that any of the advocated remedies have power to prevent the heart becoming diseased.

8. That in concluding that the treatment has prevented the heart becoming diseased, we have overlooked the fact that there might be no tendency at the time the patients were under treatment for the heart to become diseased.

9. That in *rheumatic fever* the tendency is for the heart to become diseased

during the first few days of the fever, and should it escape the early days of the disease, there is each day a lessening tendency to its implication; hence, our cases would appear to show that if at the end of the first week of the rheumatic fever the heart is free from disease, there is little or no tendency for it to become diseased during the later weeks, provided patients are treated by rest and regulated diet.

10. That the reason why the heart did not become diseased when rheumatic fever was treated by alkalies or blisters to the joints is to be attributed not to the influence of the drugs but to the natural course of the disease. For the patients did not come under treatment, until the rheumatic fever had been going on some days, and until the period when the heart was most liable to become diseased had passed over.

We ought not to conclude the paper without expressing our conviction that hitherto the investigation into the therapeutics of the rheumatic process have been rendered all but valueless by the deficiency in preliminary data. There are as yet no reliable facts in the pathology of the process: we are ignorant of the essential state of which the rheumatic symptoms are an expression.

At present, therefore, as regards treatment, our cases seem to show that we are limited to a careful regimen of the patient. Rest, mechanical and physiological. Rest in the very outset of the disease. We ought not to wait until the rheumatic process has become well developed in the joints. For it appears to us that the heart becomes involved simultaneously with the joints, and by rest we hope to quiet the heart's action, and so prevent it becoming diseased.

To regulate the temperature. To moderate excessive skin function by sponging the surface of the body with tepid water. To allay pain by placing the patient in an easy position, and sometimes by opiates. To sustain the organic nerve power by light diet, and occasionally by small doses of alcohol. To procure rest by the simplest means, especially avoiding such movements of the body as may excite the circulation. In fine, to place the patient in a physiological state of mean rest, if it may be so expressed, of the nervous, the circulatory, the muscular, and the digestive systems.

To do this fully will tax often all our energies, and we should not be just to ourselves if we did not here say that to attain this has been the object of our greatest care. It required often more consideration than was requisite for prescribing any supposed appropriate drug treatment. We are therefore, at present, advocates of the exactest treatment of the patient under acute rheumatism, though we may doubt the value of so-called specific drugs.—*Medico-Chirurgical Transactions*, Vol. lii, *p*. 43.

8.—REMARKS ON THE TREATMENT OF ACUTE RHEUMATISM BY THE TINCTURE OF THE PERCHLORIDE OF IRON.

By Dr. J. Russell Reynolds, F. R. S., Physician to University College Hospital.

The marked effects produced by the tincture of the perchloride of iron on the course of such "spreading" inflammatory affections as erysipelas and diphtheroid sore-throat induced me, some months ago, to administer this medicine to cases of another "spreading" inflammatory disease—viz., acute rheumatism. I have treated eight cases by this drug—cases all of them severe, and, with one exception, occurring during the unfavourable weather of the spring of this year. The number of cases is too small for a general conclusion to be drawn from them as to the treatment of rheumatic fever; but the character of the facts is such that they may be used to point out the direction in which such conclusion may eventually be found; while the success which attended this mode of treatment was so great as to justify its employment upon an extended scale.

I will enumerate, as briefly as possible, the essential points of each case.

Case 1.—Male, aged 26; first attack. He had been eight days ill with fever and joint-affection. He was seen on the eighth day, with inflamed joints of all four extremities, and endocarditis. Pulse 112. The urine was alkaline. His face was anæmic. Temperature 101·4 deg. He was ordered thirty minims of tincture of perchloride of iron every six hours. The patient improved at once; and on the tenth day of illness—*i. e.*, on the second day from the commencement of treatment—he felt well, slept soundly, and took food. On the thirteenth day, the patient still feeling well, the temperature rose to 102 deg., and, a few hours later, to 104 deg. Violent delirium set in suddenly on the fifteenth day. The temperature rose to 109 deg. The patient became comatose, and died on the sixteenth day; the temperature having reached 110·2 deg. shortly before death.

Case 2.—Male, aged 22; second attack. He was seen on the fourth day of illness. The knees and ankles were principally affected. He had much sweating and exhaustion, and endopericarditis. The urine was alkaline, with some discharge left from gonorrhœa of two months' duration. Pulse 100; temperature 102·2 deg. The medicine was ordered on the fourth day of illness. The pain was relieved on the next day, and was absent on the third day. The temperature was normal on the fifth day of treatment—*i. e.*, the ninth day since the attack. While this patient was taking iron, the pulse became as low on one day as 60 per minute.

Case 3.—Male, aged 20; third attack. He was seen on the sixth day of illness—*i. e.*, on the sixth day from the occurrence of the joint-affection, and the fourth day from the onset of fever. The joints were universally affected, and severely. A murmur was present both at the base of the heart and at the mitral apex—probably old. Pulse 96; temperature 102 deg. The tincture of perchloride of iron was given in forty minim doses; it was ordered on the sixth day of illness. The patient was much relieved, and the pain was almost gone, next day. The temperature was normal on the second day of treatment, or eighth day of disease. The temperature was below the normal on the thirteenth and fourteenth days.

Case 4.—Female, aged 18; second attack. She was seen first on the seventh day of illness, suffering in the joints of both upper and lower extremities, with much perspiration. Pulse 104; temperature 101·4 deg. The heart was dilated with aortic regurgitation. The pain was greatly relieved on the fifth day of treatment. The temperature became normal on the seventh day of treatment—*i. e.*, on the fourteenth day from the onset of symptoms.

Case 5.—Female, aged 18; first attack. She was admitted on the third day of illness, with typhoid aspect, much prostration, and pain and swelling of the joints confined to the lower extremities. There was a systolic murmur at the base of the heart, probably hæmic. Pulse 120; temperature 104 deg. Tincture of perchloride of iron, in forty minim doses every six hours, was ordered on the third day of illness. The pain was relieved, and the patient much improved on the fifth day of illness—*i. e.*, two days after the treatment was commenced. The temperature was normal on the fourth day of treatment, the seventh from the commencement of symptoms. In this case, after the iron had been discontinued, the pulse became irregular, weak, as low as 56 in the minute, and occasionally intermittent for two days. There was at the same time much pallor; but the patient made a good recovery.

Case 6.—Female, aged 30, seen on the eleventh day of her first attack. There had been illness, with cough and fever, for eleven days; inflammation of the joints for eight days; and sweating for one day, before admission. Both upper and lower extremities were involved. The heart was weak and irregular in its action, and there was no friction-sound at the base. Pulse 124; temperature 102·4 deg. Tincture of iron was prescribed on the eighth day of the joint-affection; and the pain disappeared almost entirely within twenty-four hours. The temperature fell at once, and became normal on the fifth day of treatment, or the thirteenth day from the occurrence of articular inflammation.

Case 7.—Female, aged 24; first attack, commencing seven days before admission. On admission, the patient was pale and sweating, with much effusion in the joints of the lower extremities, and mitral regurgitation. Pulse 120; temperature 103·4 deg. The pain was diminished immediately, and almost removed at the end of the next day. The temperature became gradually reduced, and was normal on the seventh day of treatment; and remained so until the eleventh day, when the iron was discontinued. On the eighteenth day there was a relapse, and the temperature rose again, until on the twenty-third day, it reached 104 deg. Iron was administered on the second day of relapse, and relief followed on the third day of its administration; while the temperature became normal on the seventh day of treatment, or eighth day of relapse.

Case 8.—Female, aged 16, seen on the ninth day of her first attack. The joints of both upper and lower extremities were involved. There was pericarditis with effusion. Pulse 100; temperature 102·4 deg. The pain was relieved almost immediately; and the joint-affection disappeared in the course of forty-eight hours: but pneumonia occurred, and for many days the temperature remained high—finally, however, becoming normal on the twenty-seventh day, and the patient making a good recovery.

The points to which I wish to direct attention are the following.

1. *The relief of the joint-affection.*—This appears to me to have been so definite, uniform, and speedy, that it would be difficult to account for it upon any other supposition than that it was the result of the treatment. In four cases, it was relieved in one day; in three cases, it ceased in two days; in one case—viz., that of the relapse mentioned in No. 7—it was removed in three days; and the longest period of suffering noted after the commencement of treatment was five days. If we take the mean duration of the joint-affection after the exhibition of the iron, we find it to be two days.

2. *The duration of pyrexia after the administration of iron.*—In one case —viz., that which ended fatally with cerebral symptoms—the temperature never fell below 101·4 deg; and it is important to observe this fact, notwithstanding the disappearance of the articular affection. In one case, the temperature was normal on the second day; in one, on the fourth; in two cases, on the fifth; in three, on the seventh, one of these being an example of relapse; in one, on the eighteenth day, this being in the girl who suffered from pneumonia. If we exclude from analysis the first case—viz., that with cerebral symptoms and a high temperature; and also the last—that in which pneumonia was intercurrent—we find that the temperature became normal between the second and the seventh days; the mean duration of pyrexia after the iron treatment was commenced being a little less than five days and a half.

3. *The total duration of pyrexia;* viz., that which existed from the onset of symptoms to the permanent fall of temperature. Here, again, it is necessary to exclude the first case and the last; for in the one the pyrexia never ceased, and in the other it was maintained by an intercurrent affection. In one patient, the total duration of rheumatic fever was seven days; in two, it was eight; in one, it was nine; in one, thirteen; in one, fourteen; in another, fifteen. Hence it would appear that the mean duration of rheumatic fever in these seven cases was a little in excess of ten and a half days.

4. *The influence on the duration of the disease exerted by the time at which the treatment was commenced.*—In three cases, the iron was given on or before the fourth day of the disease, and the mean duration of the malady from first to last was eight days; in four cases, the medicine was administered for the first time on the sixth, seventh, and eighth days; and in three the mean of the total duration was rather above twelve days.

5. *The entire absence of any symptom of discomfort induced by the iron.*—There was no headache in any case; the tongue cleaned; and the general feelings of the patient speedily improved. As I have already said, the number of cases here examined is too small to allow of any general deduction with regard to so variable a malady as rheumatic fever; but, while the number of cases is small, the facts are, in my opinion, so definite, and so constant in the direction to which they point, that I trust they will lead others to employ, and on a large scale, a medicine which has certainly done no harm, and has appeared to relieve very materially the pain, and shorten the duration of one of the most distressing and most tedious of acute diseases.—*British Medical Journal, Dec.* 18, 1869, *p.* 649.

9.—CHRONIC RHEUMATISM AND ITS COUNTERFEITS.

By Dr. J. MILNER FOTHERGILL, Senior Resident Medical Officer, Leeds Dispensary.

The name rheumatism—or, as it is now more precisely termed, chronic rheumatism—has been used as a generic term for persistent pains, unaccompanied by constitutional disturbance, irrespective of their causation, and has covered an unknown amount of carelessness and ignorance; while, as a verbal placebo, it has often been used to justify a do-nothing treatment, sometimes very reprehensible. This is less true, however, of the present time than of the past; and now an apyrexial condition, accompanied by varying amount of pain, is found to be the result of many other causes as well as the poison of rheumatism. It may be well to state at once what that poison is, assuming that rheumatism, or what we call rheumatism, is dependent on an altered condition of the blood: in fact, is the external expression of a material in the blood, either morbid, or normal in excess. Lactic acid is this material in the belief of most observers, but not of all. One thing, however, seems universally admitted, namely, that it is an acid. Lactic acid is a product of assimilation, and is the normal result of the digestion of amylaceous or saccharine compounds, each molecule of grape-sugar ($C_{12}\,H_{12}\,O_{12}$), being broken up into two molecules of lactic acid ($2\,C_6\,H_6\,O_6$); and it has been further stated that the oxidation of lactic acid is the true form of hydrocarbonaceous combustion. This goes on through the agency of the soda in the blood, and is imitated in the reduction of a salt of soda and a vegetable acid, of whatever kind, to a carbonate, in which form it is eliminated by the kidney. "A combustion of an acetate or tartrâte, consuming oxygen and producing carbonic acid, is, in all probability, strictly analogous to a natural burning of lactate of soda, always going on in the blood for the maintenance of the animal heat." This theory is ingenious, but will require further corroboration before it is universally accepted: it seems very probable at any rate. This, however, is certain, that lactic acid is a normal product of the body, and that rheumatism is usually supposed to be the result of its presence in excess. Lactic acid is found in sweat, and the natural emunctory of its excess is the skin. Excess of lactic acid in the blood may arise in two ways—one from excess of saccharine matter undergoing fermentative change, and overrunning the powers of excretion—or from normal production with defective elimination. Both forms are commonly seen; the first, however, more in connexion with acute, the latter with chronic, rheumatism. This *materies morbi* seems to have an affinity for the fibro-serous textures, and thus, in addition to its partiality for the joints, fixes on the fibro-serous textures of the heart; and from the changes thus produced by its action, do we have the great majority of our diseased and altered valves. It is not, however, confined to the fibro-serous textures, and may be muscular, neuralgic, periosteal, or sclerotic. Rheumatism, in its causation, has some curious relationships. It has a singular and most inexplicable connexion with the urethra. Acton says, "It would almost appear that rheumatism enters the system by the urethra. Rheumatism is produced by the passage of sounds and lithotriptic instruments as well as by the application of foreign matters. Urethral inflammation only is requisite to excite rheumatism in those who are hereditarily disposed to it. In gonorrhœal rheumatism, arrest of the discharge is often the readiest cure for it, though at other times it seems to follow the arrest of the discharge." Of this curious connexion no explanation as yet has been given. Another curious connexion exists between rheumatism and atmospheric changes: the joints of the rheumatic are often as certain indications of coming changes in the weather as barometer or aneroid. Some, in fact, only suffer from pain at these periods of change. Rheumatism is an ailment connected with families, and a predisposition may be handed down for generations. Rheumatism is often a troublesome inheritance, and in those so hereditarily predisposed, slight causes are sufficient to excite a very persistent attack. It is commonly strong and otherwise healthy families with which rheumatism is connected. Mitchell, of Philadelphia, and after him Day in England, has advanced the idea that acute rheumatism is, in its origin, cerebro-spinal, and allied to cerebro-spinal meningitis; this view seems untenable, as the one is rarely fatal, the other is commonly so. Rheumatism seems rather to be associated with the organic than the cerebro-spinal nervous system.

The symptoms of chronic rheumatism are such as might be expected from a blood poison, and its manifestations are various. "The affection may show itself in the joints, giving rise to stiffness, a dull aching, and pain produced by motion, but without heat, obvious swelling, tenderness, febrile excitement or marked sweating; or it may implicate the muscles in various parts of the body, occasioning stiffness as well as pain when moved; or it attacks both joints and muscles, or is seated chiefly in the sheaths of the nerves, leading to what is called neuralgic rheumatism; of which, for instance, sciatica often affords a striking instance."—(Da Costa.) One property it has of making rapid metastases, of suddenly quitting one part to manifest itself in another; on other occasions it lingers round one part with great pertinacity. Whatever form it assumes, so far as my experience goes, rheumatism is always accompanied by the presence of an acid, both in the secretions and excretions; and of this condition the readiest evidence is furnished by the saliva. More readily accessible, and of not normally so decidedly acid reaction as the urine, I have been led to prefer it for testing purposes. Its normal reaction is faintly acid, but frequently it is neutral, and is always so during the alkaline tide of digestion of Roberts. If the saliva gives an acid re-action as shown by the reddening of litmus paper, at all decided, especially during digestion, the presence of an acid in excess may be at once inferred. As to whether that acid is lactic or uric, it cannot furnish evidence. When the reaction is not acid, the complaint is essentially neuralgic and not rheumatic, and a clue is at once furnished to the more exact treatment. Where there is decided acidity, relief is always afforded by alkalies. Pain is often the prayer of a nerve for healthy blood (Romberg); and, when so occasioned, is most readily and certainly treated by removal of that cause, where practicable. An acid condition of the system is often seen in growing children, and is often termed rheumatism; this is the "growing fever" of Lugol. In some children, and indeed adults, who suffer from a deficient power of cell-formation—*i. e.*, the strumous—the presence of an acid is usual; it is, however, generally uric acid, and is shown by calculus, gravel, nephria, acid sweats and secretions, injured teeth from the constant presence of an acid acting on the carbonate of lime, sour breath, &c.; and this explains the efficacy of potash in these conditions. Potash acts as a veritable hæmatic and blood restorative, by aiding in the elimination of the uric acid, and thus producing a more healthy blood. "Thus the uric acid which constitutes the urinary excretion of birds, whose habits are active and temperature high, and whose blood is highly oxygenated, cannot arise from insufficient supply of oxygen, but must depend on some peculiarity in the tissues; so also in man, uric acid may be the effect of defective nutrition or primary assimilation, and not merely of imperfect metamorphosis or oxidation. The clinical history of the so-called uric acid diathesis supports this view, and shows that the remedy, in many cases, must be sought, not in the promotion of oxidation, but in modification of the nutritive processes."—(Broadbent.) In this condition, potash, by relieving the blood of its *materies morbi*, and thus improving its quality, allows of a more perfect tissue-nutrition in which the blood-glands share, and are thus enabled to perform a more perfect chylous elaboration. Potash is found in the muscles, soda in the blood; potash is more associated with tissue-metamorphosis, soda with respiratory change. Potash is the remedy in excess of uric acid, soda is just as useful with lactic acid. Urate of soda (chalkstone) is insoluble; urate of potash is a readily soluble salt. Pain, general or local, is the usual accompaniment of deficient or defective blood. Whenever the blood is altered from its normal condition we have pain; thus in syphilis, ague, lithiasis, rheumatism, anæmia, &c., we have local manifestations of a general condition. Why, however, a blood-poison should manifest itself in a *nerve or group of* nerves, as is the case in rheumatic and other neuralgiæ—

why the general condition should make itself apparent in one locality, or inversely—how it happens that one portion of the organism alone affords manifestations of a general systemic blood-poison,—is explicable enough in the case of injury or excessive action; but it is not confined to these localities, and may show itself in a manner as yet inexplicable. This is deserving of attention, and, if explained, may afford a clue to a deeper insight into the *modus operandi* of morbid action in its early stages than as yet exists. We know, from experience, that the pain resulting from these causes—the external or outward visible sign—is relieved by mercury, iodide of potassium, quinine, potash, iron, arsenic, &c., according to the cause; and that in these conditions these drugs are, one and all of them, true hæmatics—*i. e.*, they restore the blood to its normal condition.

A peculiarity of rheumatism is that, when localised, it is frequently relieved by motion; the rheumatic whose first movements are productive of agony, will get along pretty comfortably after he has been moving some time. This is well known in horses the subjects of "jack spavin," which is really a rheumatic exostosis. Other rheumatics can work all day in comparative ease, but toss nearly all night instead of sleeping. This is often the case with the hands and arms of washerwomen; it may, however, be made a question whether this is always rheumatism or not; for it may be often a form of myalgia—but of that anon. When thus localized, it affects certain parts, and there it sticks; in time changes of structure go on, and the sufferer, in addition, becomes crippled. This change may occur variously—a bony exostosis may bind together two sections of a joint, and, though most usual in compound joints, may occur in the lumbar vertebræ;—it may lodge itself in the tendons, and produce contraction and deformity; or it may lodge in the sheaths of nerves till effusion takes place, and, by compression, produce partial paralysis, as is often seen in sciatica. In this last condition the loss of power, and with it loss of sensation, complicates the diagnosis with some pressure or lesion in the nerve high up nearer the trunk. There is a great tendency for rheumatism to lodge itself in parts that have been injured—as a dislocated joint, a bruise or crush, or to linger round a pleuritic adhesion; and in accidents occurring to the congenital rheumatic, the painful consequences are often rather to be dreaded, and if possible averted, than the injury itself. As a blood disease it may show itself anywhere; it may attach itself to one place and persistently remain; or it may flit about without a fixed residence, and may simulate many other disorders—and it may be simulated in its turn. With local affections it is often confounded, and too frequently persistent local pains, indicative of serious mischief, may be allowed to pass unheeded as rheumatism. This is unfortunately the case, sometimes, with ulceration of the articular cartilages, and with osteal and periosteal affections; and when any doubt exists, great care should be taken to watch the nocturnal exacerbations, the shiverings, &c. In Langenbeck's "Archives," No. ix., is related a case of periostitis and osteo-myelitis of the femur, which was mistaken for rheumatism. The pain in the right shoulder, symptomatic of hepatic disease, and especially of an abscess approaching the serous surface of the liver, and the sympathetic pain down the left arm in some cases of heart disease, are often carelessly looked over, and their significance unheeded, by classing them as rheumatic. Intercostal rheumatism has included pleurisy, pleurodynia, broken ribs, herpes, neuralgia, the peculiar pain generally of the left side found in women, and so strangely connected with menorrhagia and leucorrhœa; the pain in either side, which is intimately connected with debility and anæmia; and again is confounded with that condition of pain and soreness of the muscles developed by overwork, and attended with both muscular and cutaneous hyperæsthesia, designated by Inman "myalgia." This condition of the interosseous muscles is probably often the real condition of the washerwomen's hands mentioned above. This pain, from stretching the white fibrous tissue, usually unyielding, is most agonizing, and was empirically applied by our forefathers in the rack and other methods of torture. But beyond all other pains, localised or otherwise, spontaneous or feigned, for simulation and dissimulation, is unquestionably, lumbago. To say nothing of its being confounded with abdominal aneurism, intravertebral cancer, disease of the spinal cord, renal congestion, abscess, renal calculus, nephralgia, lumbo-abdominal neuralgia, sprains, &c.; it is often assumed to be present when the patient is really suffering from "weak back"—*i. e.*, pain evoked in the muscular sense, and conveyed by the muscular nerves of sensation from the weight of the head and shoulders hanging on the erector spinæ. This state of over-tension is exquisitely painful, and is often quickly relieved by taken off that over-tension by the horizontal posture; it is intimately connected with growth, and with hysteria from hyperæsthesia. It is usually undistinguishable, locally, from congestion of the venous sinuses of the lumbar vertebræ, but the difference can sometimes be demonstrated by the treatment. For instance, the cure for lumbago, so fashionable a few years ago, by croton-oil, was really a rapid unloading of the bowels and relief to the congestion, and was not productive of any good in genuine rheumatism. On this subject, Copland states that true rheumatic lumbago is not connected with affections of the lower limbs, as cramps, numbness, pricking or lancinating pains, &c., which follow on lumbar-venous congestion. Rheumatic sciatica has included structural lesions, neuritis, neuralgia, specific and non-specific; while rheumatism in the neighbourhood of the anterior crural nerve is often really pain produced by the compression of the nerve by a load in the cæcum. Uterine rheumatism is often a misnomer for obstructive menorrhœa, and sometimes even for carcinoma. Rheumatic headache stands responsible for a deal of diagnostic carelessness, and has thus led to a great deal of direct and indirect mischief. Rheumatism, in fact, has been made a respectable cloak for everything that is painful, from orchitis to bruises.

Non-localized rheumatism is as liable to mistake nearly as its localized congener, and is confounded with general neuralgic hyperæsthesia, hysteria, alcoholism, tertiary syphilis, lithiasis from granular kidneys, locomotor ataxy, &c. From hysteria it may be distinguished by the general aspect of the case—hysteria occurring in young females, often of hyperæsthetic temperament, or of evident delicacy, who are rarely the subjects of true rheumatism. From neuralgia it cannot easily be discriminated always. In neuralgia, however, there is no acidity of the secretions, and some rational symptoms may assist to determine the question. Neuralgia is usually connected with the distribution of a nerve or group of nerves: there is too, according to Trousseau, tenderness over the spinal process where the nerve emerges from the spinal canal and brought out by pressure; while Valleix advanced the theory that there were special "tender spots" over the distribution of the nerve. An intermediate form of rheumatic neuralgia is not uncommon—a disorder in which there may be both a rheumatic and a neuralgic element, and where the acidity is very slight—in fact, a species of hybrid requiring a treatment as composite as itself. Professor Leudet, of Rouen, has described a variety of chronic alcoholism, in which the predominant symptom is pain, which may vary in intensity, be deep-seated or superficial, and accompanied by anæsthesia or acinesis, cramp, and increased reflex movements in the lower limbs. Mr. Higginbotham, of Nottingham, has described a similar condition under the name of alcoholic rheumatism, which used at one time to puzzle him greatly, but which, in time, he got to connect with alcoholic excess; and which, in fact, depended on it, being irremediable except by abstinence, and which has entirely disappeared on the sufferers becoming total abstainers. This affection, though necessitating a peculiar treatment in accordance with its cause, is a form of genuine rheumatism, as it is intimately associated with the use of fermented alcoholic liquors, where an acid is easily generated, and does not seem a concomitant on the use of distilled spirits, which not readily undergo acetous fermentation. Mr. Higginbotham says that, even where structural change has gone on, relief from suffering may be obtained by abstaining from the exciting cause.

Closely allied to chronic rheumatism in character, causation, and chronicity, are the pains accompanying granular or contracting kidney. This form of renal disease is essentially chronic, and carries with it a train of symptoms which as yet are not clearly understood, especially as regards the symptom chiefly under consideration here—viz., pain. It is not to be distinguished from rheumatism by any casual observation, and perhaps sometimes will escape the most careful scrutiny. Intimately associated with the retention of uric acid, thus causing an acid reaction of the secretions and excretions—a blood-poison, thus manifesting itself anywhere—its resemblance to chronic rheumatism is nearly complete. No absolute distinction can be positively drawn except from examination of the urine; but in this form of renal disease albumen is often absent for long periods together, and thus the readiest witness is wanting. The urine varies greatly, however, in quantity, and when great in quantity is usually of low specific gravity, and contains granular casts, which, however, are often few in number and not easily found. When found they settle the question as to the presence of renal disease. An absolute diagnosis is, however, not always attainable. We are then thrown back upon the rational symptoms, and the distinguishing characteristics may be found to run somewhat in the following direction:—Rheumatism is associated with the fibro-serous textures; in lithiasis the poison has more affinity for the true serous surfaces, and is often the cause of pleurisy and peritonitis. Lithiasis more affects the muscles, and rheumatism rather the large joints. Diarrhœa, vomiting, and other affections of the mucous membranes, as bronchitis, accompany lithiasis; and in these it differs from rheumatism. Lithiasis is accompanied by headache, especially of the vertex (persistent and recurring vertical headache is almost pathognomonic of lithiasis), or the pain may be frontal. There is often, too, a want of power to collect the ideas so as to interfere somewhat with the patient's pursuits, if of an intellectual kind. In lithiasis there is a wakefulness at night, not entirely due to the pain, while frequently there is cardiac depression from the blood-poison, closely allied to that caused by the biliary acids when circulating in excess, but not characterized by such severe palpitation as occurs in biliousness. In this it differs from rheumatism. There are, too, in the skin manifestations of lithiasis; and the various pricking eruptions, and that irritable condition of the skin intimately connected with recurring erysipelas or erythema in elderly people, are part of its results. These patients are readily acted on by cold, and exposure of the face to a cold wind almost sets it in a blaze; and the cold, so called, thus caught is accompanied by an inflammatory swelling of the face,—in fact, renal dropsy of a passing character.

It behoves us, then, to look more carefully into the cases of chronic rheumatism, as there is ground for strong suspicion that many of our chronic rheumatics (so-called) are really sufferers from a very serious form of renal disease.—*Edinburgh Medical Journal, Feb.*, 1870, *p.* 684.

DISEASES OF THE NERVOUS SYSTEM.

10.—ON HEMIPARAPLEGIA.

By Dr. C. E. Brown-Séquard, F. R. S., &c.

I have, I think, positively proved that when a lesion exists in a lateral half of the dorsal region of the spinal cord, above the dorso-lumbar enlargement, if there is a paralysis of voluntary movement, this loss of power is in the lower limb on the side of the lesion. I can go farther, and state that many clinical facts establish, beyond any possibility of doubt, that a lesion, wherever located in the length of the spinal nervous centre, but limited to one of its lateral halves, if it produces paralysis, invariably causes it in the muscles on the side of the lesion receiving their nerves from the parts of that nervous centre below the seat of the alteration. We may therefore conclude, in cases of paralysis of one of the lower extremities, that, if it is caused by a lesion in the spinal cord, this organic alteration exists in the side where the loss of movement is found.

I have also proved, by the decisive cases of Monod, Charcot, and Ore (Lan-

cet, Sept. 25th, 1869), that when a lesion produces paralysis in a lower limb, in consequence of the alteration it causes in one of the lateral halves of the spinal cord, in the dorsal region, above the dorso-lumbar enlargement, if it causes anæsthesia of tactile and painful impressions, it is in the non-paralysed lower extremity, and not in the paralysed limb, that we find this loss of feeling. As regards sensibility, therefore (at least the two kinds of that faculty I have just named), the opposite side of the body is that where it is lost in cases of lesion in the dorsal region of the spinal nervous centre, as it is also in cases of lesion in the cervical part of that centre, according to the demonstration I have given in my lecture on Spinal Hemiplegia.

Consequently, if in a case of organic disease of the spinal cord we find these very peculiar symptoms—first, paralysis of one of the lower extremities, with conservation of sensibility to tactile and painful impressions, and secondly, loss of these kinds of sensibility, with conservation of voluntary movements in the lower limb,—we may conclude that the cause of these symptoms is in the lateral half of the spinal cord, on the side corresponding to that of the paralysis, and opposite to that of the anæsthesia.

From the study of a number of cases of hemiparaplegia, I can state that when this affection is complete—*i. e.*, when all the symptoms it can afford co-exist,—it is characterised by the following features:—

(*a*) *On the side of the lesion in the spinal cord:*

1st. Paralysis of voluntary movement.

2nd. Loss of the muscular sense.

3rd. Hyperæsthesia to touch, to pain, to tickling, and to heat and cold.

4th. Perfect knowledge of the place on which is made an impression.

5th. Vaso-motor paralysis and elevation of temperature.

6th. Existence of anæsthesia in some parts, or in a small zone, between the upper limit of hyperæsthesia, and the healthy parts of the body.

(*b*) *On the side opposite to that of the lesion:*

1st. Conservation of voluntary movement, and of the muscular sense.

2nd. Anæsthesia to touch, tickling, pain, and heat and cold.—*Lancet, Dec.* 25, 1869, *p.* 867.

11.—IMMEDIATE RELIEF AND RAPID CURE OF SCIATICA BY HYPODERMIC INJECTION OF MORPHIA.

By Dr. Henry Lawson, Assistant-Physician to St. Mary's Hospital.

It may be as well, perhaps, to explain both why I have taken up sciatica as a subject for a communication to our leading medical journal, and why I have expressed such very decided opinions as to the fallacy of the method of treating it hitherto in vogue, and the vast importance of attending to one symptom—that of pain. I must mention, then, that I am myself an old sciatica sufferer, and that in my own person I have supplied what I believe to be the most obstinate and dangerous case of this affection that I am acquainted with. I shall give the details of my case among the records of typical instances at the end of this paper, but *en passant* I may mention that the pain along the course of the sciatic persisted for more than six months; that it first reduced me to the employment of crutches, and then absolutely prevented locomotion; that the limb became permanently flexed and terribly wasted; that nearly every remedy in the pharmacopœia, and many out of it, were tried in vain; and that at last, under the advice of Mr. Ernest Hart, subcutaneous injection of morphia was attempted, and with the most signal and immediate success. Indeed, I am not outstepping plain matter of fact when I assert that to the method of treatment proposed and most patiently carried out by that gentleman I owe my restoration to health. For six months I had hardly known what sleep was, notwithstanding the administration of opiates three and four times a day. Appetite was utterly lost; physical power was prostrate; mind, through long suffering, was enfeebled to that degree that I look back upon that period of my existence with astonishment and horror. I was, indeed, fast sinking into the grave, a victim to what the philosophy of modern physic styled a symptom, and which it was not considered necessary to deal with in any but a secondary degree. Five minutes after the first injection of morphia I experienced the only ease I had known for nearly seven months, and I need not say that by a continuance—necessarily protracted in so grave a case—I was in a few months restored to perfect health. From that moment I determined to seek out cases of sciatica, and afford to the suffering that blessed relief from pain which only those who have gone through many dreary nights of sciatic agony can realise. I have now accumulated over thirty cases of true sciatica; and while I have found other remedies do less or more benefit to the patients, I have never found any effect a cure and remove the pain except the salts of morphia, administered hypodermically and locally. They have never failed. In some instances they require to be maintained and persevered in; but they give instantaneous and effectual relief. They never impair nutrition—indeed, they promote it indirectly, and in recent cases they effect a cure so rapidly that the result seems almost like a charm to the pain-worn patient.—*Medical Times and Gazette, Dec.* 4, 1869, *p.* 654.

12.—ON THE TREATMENT OF TRAUMATIC TETANUS BY THE CALABAR BEAN.

By Dr. Eben Watson, Professor of Physiology in Anderson's University, &c., Glasgow.

[The patient, who was a strong young workman, 27 years of age, trod on a rusty nail, which ran up into his foot, inflicting a very painful wound. Tetanus soon appeared. In the treatment adopted, with the exception of an occasional purgative and appropriate diet, he took no other drug but the Calabar bean.]

I must, however, call attention to the manner in which this drug was administered. It was not slavishly given in certain quantities and at certain times; but I had the patient watched day and night by my house surgeon, or some of the other assistants resident in the infirmary, and by non-resident dressers, who took the duty by turns. I could thus direct the treatment intelligently from hour to hour according to the patient's state. We soon established the fact that it required two grains of the alcoholic extract of Calabar bean to produce any good effect in this case, and that dose was given in solution as a weak tincture; but the intervals of administration were very various. At the height of the disease, and during its many exacerbations, I frequently ordered the above dose to be repeated every quarter of an hour for three or four times till relaxation was produced, which it never failed to be; and then the usual intervals of half an hour or a whole hour were resumed.

Again, sometimes his stomach rejected the drug, it being squirted up violently rather than vomited. On these occasions I directed that double the quantity should be given by injection into the rectum, and for this purpose a solution of the extract in starch water was employed with success. I may mention here, that in this and other cases I have employed the method of subcutaneous injections, but in my hands they have not produced any very decided or reliable effect.

But the important *new fact* which this case establishes is the freedom with which the drug may be used in such cases, and of this I shall give some idea by the following epitome.

The whole duration of the disease, from its commencement to its cure, was forty-six days, and of these he was under treatment by the Calabar bean for forty-three. During these days he took the following enormous quantities of the extract.

During the first three days and nights he took twenty-three grains of the extract, in rapidly increasing quantities; thus he took two grains during the first twenty-four hours, eight grains during the second, and thirteen during the third such period. These doses merely sufficed to keep the disease in check. They never produced decided relaxation.

I then employed a very pretty tincture made by percolation and obtained in

Edinburgh, but it did not seem strong enough for our case in the doses ventured upon (♏x to xx); I therefore gave it up in a few hours, because no one can be certain of its exact strength, and I returned to the tincture of the extract mentioned above.

For the next seven periods of twenty-four hours, he took in each period sixteen grains of the extract; then the quantity was increased to forty-eight grains in twenty-four hours; and in the next twenty-four hours to fifty-seven grains. Next day and night he was easier, and took only forty-two grains; but next he was again worse, and took the very large quantity of seventy-two grains. He did not lose any part of these doses, but took them all by the mouth and retained them. They were all needed to keep him only moderately relaxed, and it is noteworthy that no disagreeable effect was produced by the bean, but its action in relaxing the rigid muscles was quite obvious.

Next day and night the quantity used was forty-eight grains, then forty-four, then thirty, then twenty-four; but, apparently owing to a strange obstreperousness in his behaviour, as for instance his insisting upon coming out of bed and lying on the floor, he became worse, and required the bean to the amount of fifty-four grains, during the next twenty-four hours. This, however, had a disturbing effect on his heart, which became tumultuous in its action. He was likewise very sick and pained in his bowels; hence, for a few days the bean was given by injection into the rectum, as was formerly mentioned. However, he gradually improved, so that the quantity of the bean given was soon diminished to thirty grains; then to twelve, then to six, once more rising to twelve grains for one day, and again falling to four, and finally the drug was stopped altogether on the 26th of January, and I am glad to add that the man is now perfectly well, and fast recovering the strength he had lost in his fearful struggle for life.

A curious circumstance remains to be told, not connected with the Calabar bean, viz., that after the man's recovery a small suppuration took place in the foot at the seat of the original injury, and when this was opened a small bit of leather was extracted. This was evidently part of the sole of the boot which had been carried into the foot on the point of the nail, and remained there till it excited suppuration and was expelled. I have wondered if the presence of this irritating substance was the cause of the protracted nature of this case, and if it would have been more easily and more speedily cured had it been extracted sooner. No doubt the practice of formal incisions with the view of dividing the nerves of the wounded part, have failed to arrest tetanus once it has been established; but as many such cases present themselves with the wound thoroughly cicatrised, it may be questioned whether it might not be good practice to cut through the cicatrix so as to explore it and make sure that no foreign matter was imbedded beneath it. The very incision might relieve irritation, and at all events could do no harm. I would recommend that this should be borne in mind by surgeons, as a practice authorised by the present case, wherever there is the slightest possibility of foreign matter being enclosed within the cicatrix of a wound causing tetanus.

But to return for a moment, in conclusion, to the main object of this paper: I beg to press on the attention of my professional brethren the safety of a very full and free administration of the Calabar bean in traumatic tetanus, if only two conditions be fulfilled: viz., 1st, That the patient be well and intelligently watched, so that the drug be given really as often and as much as the patient requires at the time; 2nd, That his strength be well supported by fluid nourishment and stimulants. Now, the relaxation produced by the bean enables the patient to swallow fluid food, and therein consists its superiority to all other relevants, such as chloroform and chloral for instance, which prevent the taking of food. I am encouraged to hope that, given as I have directed, the Calabar bean may yet be found as certain in the cure of tetanus, as strychnine is in its production.

I may add that, in the treatment of this case, not less than 1026 grains of the alcoholic extract of Calabar bean were, one way or another, introduced into the patient's system; and if each grain of the extract is equivalent to *sixteen of the* powdered bean, the quantity given would represent fully thirty-four ounces of the latter. As the beans, on an average, weigh about sixty grains each, it would take 272 beans to yield the requisite quantity of the powder, but I suppose that more than these would be actually consumed in the preparation, as the rind would have to be excluded.—*Practitioner, April,* 1870, *p.* 207.

13.—CASE OF TRAUMATIC TETANUS TREATED BY SUBCUTANEOUS INJECTION OF CALABAR BEAN.

By Dr. William Haining, House-Surgeon to the General Infirmary, Chester.

J. R., aged 29, a strong, healthy-looking labourer, of steady habits, was admitted into the General Infirmary, Chester, under the care of Mr. Watson, on the 1st of June, 1869, his right foot having been completely crushed under the wheels of a locomotive engine. The lower half of the leg being quite emphysematous, and the veins, as high as the inner side of the knee, presenting a varicose appearance, amputation was deemed unadvisable at the lower third of the leg, and was performed by an anterior and posterior flap at the "seat of election." Although a good deal of blood had been lost by the patient, he progressed very favourably until the seventh day after the operation, when the lower border of the anterior flap assumed a gangrenous appearance, which rapidly spread, until in a few days the whole flap sloughed off on a level with the exposed end of the tibia. The posterior flap which remained quite healthy, was then firmly strapped forward, and the process of cicatrisation proceeded very favourably from below, the edge of the anterior flap remaining for three weeks hard and abruptly defined.

On the evening of the 17th slight stiffness about the neck was complained of; and on the following morning the mouth could be opened scarcely wide enough to admit of the tip of the tongue being protruded, the neck being so rigid that the head could not be bent forwards or turned to either side. The face bore the usual tetanic expression of great suffering, although the patient was conscious of nothing more than slight uneasiness. Towards evening there was a good deal of twitching in the muscles of the stump, and a very perceptible amount of opisthotonos. The strapping was removed from the wound; the bowels, which had not been opened for two days, were freely opened; and one-grain doses of the extract of Calabar bean were given every three hours. On the 20th, the symptoms having increased in severity, the doses were doubled in strength, each being followed, in rather less than an hour, by complete relaxation of the jaw. On the 22nd the abdominal muscles were very rigid, the back arched, and the stump twitching violently; but three-grain doses of the extract completely relieved all spasm. During the night, however, there was a great deal of nausea, with occasional vomiting; and as, on the following morning, the mouth was so firmly closed, that no food could be taken until about an hour after each dose of the medicine, the subcutaneous was substituted for the internal administration of the remedy, an injection of half a grain producing a more speedy but less permanent effect than the dose of three grains. The injections were gradually increased in strength until, on the 8th July, they amounted to forty-one grains within little more than twenty-four hours; the largest individual dose being six grains. On the 29th June they were purposely omitted for ten hours, at the end of which time the patient was in a very distressed condition, the jaws being firmly clinched, the abdomen as hard as a board, and the body so arched that it rested entirely on the back of the head and the lower part of the left leg. An injection of three grains gave complete relief in about seven minutes.

On the 4th of July the last ligature came away, and on the same evening and once again two days afterwards, the left leg became cold and numb, feeling, as the patient expressed it, "quite dead;" but there was no obstruction of the arterial circulation through it. Just before the spasms began to be severe, micturition was imperfectly performed, the urine being expelled painfully and in sudden jets. From the 7th till the 12th the injections were required from seven to nine times in the course of twenty-four hours, their frequency being ruled by the permanence of their effect. There was no complete trismus after the 4th, although opisthotonos continued gradually to return in from two to four hours after each injection, by the puncture of which it was always momentarily increased. On the 13th there was a decided remission in the severity of all the symptoms accompanied by slight delirium, and a rather tympanitic condition of the abdomen. On the 14th the tympanitis was very distressing, the opisthotonos being slight; but the abdominal symptoms gradually subsided after the repeated use of turpentine enemata. The doses of extract, which had been much lessened from the 13th, were on the 19th altogether discontinued; and from this date the patient made such uninterrupted progress, that on the 24th he was able to be out of bed, feeling very weak and shaky, it is true, but quite free from all tetanic symptoms, and with the stump, which had cicatrised very slowly, and from which a small exfoliation from the tibia had been extracted, completely healed over. A day or two before the occurrence of the tympanitis a number of small wen-like abscesses appeared over the chest and left arm, where the injections had been most frequently made, but they speedily healed up after having been evacuated by puncture. Besides the Calabar bean no other drug was employed, the patient's strength being maintained by a good nourishing diet, for which there was a tolerable appetite after the action of the bean had been fairly established.

It can scarcely be doubted that this was a case of tetanus, of no very mild type. The onset of the symptoms, eighteen days after amputation, was somewhat sudden, and, occurring several days after removal of the anterior flap, when the stump appeared to be healing kindly, it was certainly unexpected. The cause of the disease was probably connected with the delay in the separation of the ligatures, as well as with the irritation which results from the change occurring in the condition of the muscular and nervous tissues during the process of cicatrisation. In the *American Journal* for last October a case is reported in which tetanus occurred three weeks after a double amputation, when the stump had quite healed up, except at the point at which the ligatures came out, the symptoms, after two days' duration, abating on removal of the ligatures. In the present case, the three ligatures came away respectively on the twenty-sixth, twenty-eighth, and thirty-third days after the operation; and though a decided remission of the symptoms took place within a week after removal of the last one, it might be rather too much to say that it was consequent upon it, as by that time the process of cicatrisation was completed.

The antagonistic effect of the remedy upon the well-marked trismus and opisthotonos was immediate and complete. The arched back, painfully tense abdomen, quivering limbs, and anxious countenance, were generally relieved in from five to ten minutes after each injection, by comfortable decubitus, a feeling of drowsy ease, and during the night by short snatches of sleep. The frequency of the injections, as well as their strength, was so regulated by careful attention as to keep the spasms thoroughly under control. For this purpose repetition of the injections was necessary, sometimes every two hours, at other times not oftener than once in six hours. During the whole of the time the patient was under the influence of the bean the pupils were very much contracted, the skin was bathed in perspiration, and daily free evacuations were obtained from the bowels. The effect of one or two of the larger doses, administered when the symptoms were not so severe, was to produce nausea and vomiting, involuntary purgation, and a feeling of great depression, with fibrillary spasms of the muscles, especially those of the face, marked slowing of the pulse, and most profuse perspiration. The injections were made over both arms and shoulders, and over the chest, abdomen, and left thigh, but in the latter situation, their effect did not seem to be either so well marked or so rapidly produced.

The total quantity of extract used between the 18th of June and the 19th of July was a few grains over ten drachms, the preparation ordered being that *made according to* the British Pharmacopœia. As the doses required were sufficiently large to justify doubts as to the purity of the extract used, specimens were obtained from three different firms, whose names ought to be a guarantee that their preparations were as genuine as the present irregular commercial supply of the bean will allow.

That a few small abscesses should result from over 140 punctures is scarcely surprising, although the solution injected was made slightly alkaline by the addition of bicarbonate of potash, and was in that condition found to be less irritating than when merely neutralised by carbonate of soda.

From the results obtained in this case it may not be too much to infer that in tetanus the administration of Calabar bean should not in any case be limited to effect mitigation of the symptoms, but should be perseveringly continued in doses gradually increasing in frequency as well as in magnitude, until either the tetanic spasms are completely overcome, or the physiological effects of the drug are manifested to a dangerous degree. Once having obtained complete relaxation, it seems far from improbable that, in a large proportion of cases, careful, free repetition of the doses on the return of the least appearance of spasm, may enable us to maintain complete control over the symptoms, until their cause becomes much enfeebled or is altogether removed.

Note.—Since the foregoing notes were written, the patient from the breaking of one of his crutches, fell heavily on his stump, bruising it very much, and cutting it transversely through the whole breadth of the cicatrix, so that the end of the tibia was exposed. Owing to the great extent of cicatrised surface, the process of reunion proceeded very slowly, and was further delayed by the exfoliation of a small piece from the end of the exposed bone. Three weeks after the accident, he was enabled to leave the hospital for the country, and there is now but a small extent of surface unhealed, whilst his general health, as evidenced by his physical appearance, seems better than it has ever been.—*Lancet*, *Dec.* 18, 1869, *p.* 834.

14.—NITRITE OF AMYLE IN TETANUS

By M. Foster, Esq., Huntingdon.

The treatment of traumatic tetanus is so empirical, and the favourable results of any medicine are so problematical, that it appears legitimate practice to use any *likely* remedy. In a practice of thirty-four years I have seen seven cases, all of which proved fatal, until this time I prescribed nitrite of amyle inhalation. I was induced to try it from its supposed property of alleviating the spasms of angina pectoris, and for which I had previously secured a supply.

J. B., aged fifty-two, publican, smashed the third finger of his right hand on Dec. 11th, 1869. He was exposed to much wet and cold on the 20th; felt himself very ill on the 22nd, complaining of stiffness of the jaws. My partner, Mr. Lucas, saw him on the 23rd, when tetanus was setting in fast. I saw him on Christmas-day. At this time his jaws were fixed, and on the recurrence, very frequently, of tetanic spasms, his body was rolled up into a rigid ball. I gave him five drops of the nitrite on a handkerchief. The inhaling of it had an immediate effect in lessening the spasms. Directions were left to administer the same on each return of the spasms. This was assiduously done by his wife. From that time onwards the spasms were *held in check* until the ninth day, when he had inhaled an ounce, and the case might be said to be reduced to a semi-chronic state, with a fair prospect of recovery. He was most *thoroughly* supplied with nutrients, a few stimulants, tonics, and aperients. He gradually improved until the end of the month, when he was convalescent.

His perfect recovery to health has been retarded by some attacks of catarrh and congestion of the lungs; otherwise he is well.

I know it is foolish and rash to pronounce any treatment satisfactory upon a single case, such as this; and it is for the profession to try its influence, for good or otherwise, in other cases, as they may arise.—*Lancet*, *April* 9, 1870, *p.* 533.

15.—TRAUMATIC TETANUS CURED BY CHLORAL.

M. VERNEUIL has presented a note to the French Académie des Sciences, by the hands of M. Wurtz, in which he observes that, experiment having established the fact that chloral is antagonistic in its action to strychnine, it might almost be anticipated that it would prove useful in tetanus. And this hope seems to be realised, for M. Liebreich has already reported a case of rapid recovery from trismus under its use. A second still more demonstrative instance is afforded by a case that has just occurred in the Lariboisière Hospital. The patient was a young and healthy mason, who at the end of January crushed the extremity of the right radius with a stone. On the eighth day tetanus supervened, and quickly extended to the muscles of the face, jaws, neck, spine, abdomen, and lower limbs. The pain was intense and persistent. Subcutaneous injections of hydrochlorate of morphia, and the internal use of chloral, were simultaneously employed. The action of the latter was prompt and decisive, the contraction of the muscles diminishing, and the pain being allayed almost instantaneously, succeeded by long and profound sleep. The chloral being intermitted, the symptoms reappeared, to vanish again as soon as it was recommenced. A month elapsed before complete recovery took place. The daily doses amounted to from one drachm and a half to three drachms, administered in water. No derangement of the stomach was produced, and the patient was able to digest easily a very abundant dietary. A case of a similar nature is reported to be under the care of MM. Dubreuil, Lavaux, and Onimus.—*Lancet, April* 16, 1870, *p*. 560.

16.—A CASE OF SEVERE CHOREA DURING PREGNANCY SUCCESSFULLY TREATED WITH HYDRATE OF CHLORAL.

By Dr. JAMES RUSSELL, Physician to the Birmingham General Hospital.

[Seeing that in the severer forms of chorea life is threatened from the exhaustion caused by want of sleep, we can hardly conceive any remedy so likely to be of service as chloral.]

E. M., aged 21, a healthy, vigorous-looking young woman, was admitted into the Birmingham General Hospital on Oct. 29. She was nearly five months advanced in pregnancy with her first child. Choreic movements developed themselves from an unusually early period of gestation, almost from the beginning. It was asserted by her husband that she exhibited some irregular movements of the hands before marriage, but this assertion the patient most positively negatives. For the last three weeks, and especially for the last fortnight, the movements have become very violent, so that she was quite unable to stand, and was confined to her bed. They commenced in the left arm, and subsequently became general. Her eyes were "set," and the globes often "worked." She had difficulty in opening her mouth, and the masseters were observed to twitch. She quite lost the power of articulating, though she retained that of swallowing. Her sleep also was very much disturbed. She had never suffered from rheumatism, though a sister had been laid up with rheumatic fever. Her heart was healthy, her urine was free from albumen.

At admission she presented a very aggravated form of chorea, the limbs and trunk being tossed at intervals with frightful violence; articulation was practically extinguished, but she swallowed fairly; the pupils were contractile and of medium size; her mind was clear, but she was exceedingly emotional.

Full doses of bromide of potassium failed entirely, and her first night in the hospital was passed with only an hour and a half of sleep. At noon, on October 30, Dr. Welch, our house-physician, administered the hydrate of chloral, and during the ensuing twenty-four hours she took seven doses, the *first two of* ten grains, the succeeding ones of fifteen. The first two doses procured some sleep, but after the third the sleep became more continuous, lasting successively for three, five, and three hours and a half. Whilst she was awake, the movements, though occasionally violent, were much lessened, and she spoke distinctly; she was also able to protrude her tongue; she took liquid food.

Thirty grains of chloral at 6 p.m. on the 31st were followed by two hours' sleep, but pain, seated apparently in the uterus, kept her awake during the remainder of the night; the movements returned in the morning with much violence, chiefly in the trunk and extremities, speech was again interrupted, and she became much excited. Nutritive enemata were now ordered on November 1, each containing six grains of quinine, with cod-liver oil; and two doses of tincture of opium, of thirty and forty minims respectively, were also administered by the rectum, the chloral being suspended. Although she was quiet during November 1, the smallest excitement threw her into instant convulsion, and during the night, though feeling a great desire to sleep, she was unable to close her eyes. The uterine pain subsided.

On November 2, after twenty grains of chloral at noon, she slept with little intermission till 9 p.m., when the dose was repeated, and she slept through the whole night; she told us next morning that she had enjoyed more sleep during that night than she had through the entire preceding month. She was almost perfectly quiet; her pupils were of medium size and contractile. Pulse was 104. She laughed and was in good spirits, but complained of inability to chew. She again took two doses at 5 and 9 p.m. of November 3, and slept from the former of these hours until 2 a.m., with one interval of an hour and a half. We found her in the morning perfectly quiet, though a little fidgety, and her speech completely restored.

The same treatment on the evening of the 4th procured ten hours of nearly continuous sleep, and the sleep continued through most of the following day. She now began to feed herself. The following night (of the 5th) the remedy nearly failed to give sleep; but on the 6th a single dose was perfectly successful. On the 7th no chloral was given; the night was sleepless. A single dose on the evening of the 8th gave sleep through the entire night, and next morning she carried liquid food to her mouth, talked well, and protruded her tongue perfectly.

The chloral was discontinued on November 10. She had begun to walk, though in a very imperfect manner until Nov. 25. She took every four hours fifteen minims of the tincture of hemp; she steadily improved in walking, and had good nights. From the 18th she began to sit up, and from Dec. 3 spent a considerable part of the day out of bed, walking with fair facility, talking naturally, and presenting only the usual characters of a mild attack of the disease. She had emaciated partly, but otherwise was in good health. She left the hospital on December 10, presenting only the symptoms of a mild attack of her disease.—*Med. Times and Gazette, Jan.* 8, 1870, *p.* 30.

17.—ON THE ACTION OF CHLORAL IN THE TREATMENT OF THE INSANE.

By Dr. JOHN B. TUKE, Medical Superintendent of the Fife and Kinross Lunatic Asylum.

Being desirous of ascertaining what influence the hydrate of chloral might have in the treatment of insanity, I instituted a limited series of experiments on certain patients recently admitted, and also on some old-standing chronic cases.

I selected, first, a case of chronic alcoholism characterized by acute mania; second and third, two cases of asthenic insanity, both symptomatised by melancholy; and, fourth, a case of climacteric insanity, characterised by melancholy. There was no other recent case in the asylum but the one mentioned in which maniacal excitement existed, otherwise chloral would have been employed.

In order to be able to test most fully the action of the medicine, these four patients were placed under special observations for three days previous to its administration; accurate notes were taken of the temperature, pulse, respiration, and general condition, twice a day, and also the state of the urine, as to quantity and quality. For the next four days, half-drachm doses of chloral hydrate were administered at 10 A.M. and at 9 P.M., and observations taken at 11 A.M., 2.30 P.M., and 10 P.M., so as to enable me to judge of its immediate effects and the state of the patients during the interval. On the next three days none of the medicine was given, observations being still continued. Then for four days more, half-drachm (in one case two-scruple) doses were given as before, morning and evening. Subsequently half-drachm doses were administered at night, for a few nights, and then entirely discontinued. A short detail of each case will serve best to show the results.

Case 1. *Insanity of Alcoholism.*—Agnes G., aged forty-eight. During the term of preliminary observation this patient was more or less excited, sometimes very much so. The tongue was foul; appetite good; bowels open; never menstruated since her admission. The morning temperature ranged between 99·3° F. and 101·8° F.; the evening, between 98·4° F. and 99° F. Morning pulse 84, of fair quality; evening, between 80 and 90, of fair quality. Respiration 24 per minute. Urine highly charged with urates, acid, and with a specific gravity of 1030.

The administration of chloral in half-drachm doses had no effect in moderating the intensity of the mental symptoms. It produced considerable diaphoresis, and slight drowsiness for an hour or two, which soon passed off. The most marked effect was a sudden fall in temperature within an hour after exhibition. Thus, on the first day, one hour after the medicine had been taken, the temperature fell to 98° F., 99·3 F. being the average temperature at the same time on the three previous days. By 2·30 P.M. it had risen to 99·6° F., and at 9 P.M., an hour after the second dose, it had again fallen to 97·7° F.; and on the second day the temperatures were at the several hours 98·4°, 99·8°, and 97·8° F.

Three days were allowed to pass by without the medicine. During this period she was, on the whole, quieter, although at times noisy. On the medicine being resumed, two-scruple doses were given, with the same effect on the temperature, and, after seven doses, produced deep and continued sleep. The general character of the excitement was toned down, and after the drug had been persevered with in full doses at night-time for a further period of six days, the patient was very much improved.

As this is her second attack, a cure is hardly to be looked for; but the change for the better is well marked; and, as she had been very maniacal for weeks before its administration, it may be fairly assumed that it mainly influenced the improvement. She is now quiet, works pretty well, her appearance and expression are much improved, she is conscious of her previous excitement, and she sleeps well in the general dormitory.

Case 2. *Climacteric Insanity.*—Isabella B., aged fifty-two. Second attack. Says her soul is lost; looks suspiciously around her; is easily startled; moves her head in a quick, jerky manner; sleepless at night. Bowels open; appetite good; tongue clean; urine pale and clear, slightly acid, specific gravity 1014. Morning temperature 97·3° F. to 98·3° F., generally lower than the evening temperature, which ranged between 98° and 98·4° F. Morning pulse 80, of good quality; evening pulse varying from 76 to 100, and of average strength and fulness. Morning respiration 18 to 20 per minute; evening respiration rather quicker.

Half-drachm doses of chloral were administered twice a day. Its effect on this patient was to produce a condition of semi-intoxication, followed by deep and refreshing sleep. She complained occasionally, on waking, of slight headache. The restless and startled look were much abated, and her appetite was not interfered with, Shortly after the dose was taken a moderate, warm perspiration broke out on her skin. The evening temperature was generally higher than in the morning, and the pulse improved in character. On the discontinuance of the medicine the restlessness returned to some extent, as also did the sleeplessness at night. On its resumption these symptoms disappeared, and now there is well-marked improvement in the case, although the chloral was not pressed more than four days on the second occasion.

Case 3. *Idiopathic Asthenic Insanity.*—Helen C., aged twenty-five, admitted in a very bad bodily condition; feet œdematous; extremely melancholy; constantly crying and bemoaning her condition, and occasionally refusing food; bowels costive; tongue foul; temperature low, ranging in the morning from 97·1° to 97·4° F., and in the evening from 97·1° to 97·7°; pulse small and very varied in frequency, at one time being as high as 120, and next day falling to 64; urine pale and clear, 1010, neutral. Chloral was given in half-drachm doses. The effects were well marked after each dose. A sweat broke out, mild intoxication ensued, and then deep sleep. The temperature fell most markedly after each administration; on one evening, at 10 P.M., one hour after the dose, it fell to 95·8° it having been 96·9° at 2 P.M. On all occasions there was a very well-marked fall. The pulse improved in character. The state of the urine was as follows: pale, slightly acid, specific gravity 1015. Her mental symptoms were much abated. She began to work; and although still miserable, began to see some hope for herself. On discontinuing the chloral, restlessness and irritability returned, which were again allayed on its resumption. On the second occasion the medicine was administered for four days, and with good results. The patient is well on the road to convalescence, is employed as a housemaid, sleeps well, and is picking up rapidly in bodily condition.

Case 4.—Mrs. S., aged thirty-four. This patient had been insane for eight months previous to admission. She was noisy, night and day; crying, restless, and dementedly melancholy; a most distressing case, as she irritated the other patients, and kept the whole gallery in confusion. Judging from her appearance her case was almost hopeless. The expression of the face was vacant and silly when at rest; hair wiry and dry; and language utterly incoherent. Bodily condition good. Temperature in the morning generally lower than in the evening, rising *pari passu* with her excited mental condition, being sometimes as high 101·4° Fahr., and at others as low as 97°. Pulse 100, of fair quality. Respiration from 20 to 24. Urine high-coloured and clear; acid; specific gravity 1012.

The effects of chloral on this patient were very striking. After the sweat she fell into a state of maudlin intoxication and good nature; face flushed, slightly sick, eyes suffused, and gait unsteady. In about an hour she fell into a deep sleep, which continued for some hours. This was the invariable effect of each dose. The temperature generally stood high at night. The pulse ranged from 90 to 100, small; respiration from 16 to 20; urine natural in colour, acid, and specific gravity 1026. On leaving off the medicine the old symptoms returned, although not with so great intensity. When resumed, it produced the same effects as at first; and on the second discontinuance the condition of the patient was much improved.

I have used chloral very frequently of late in chronic cases of insanity in which violent outbursts of excitement occur, and invariably with good results.

The insomnia of climacteric melancholy is much relieved by a half-drachm to a two-scruple dose at bed-time.

The advantages of chloral over all other hypnotics with which I am acquainted are—

1. That it is more uniformly certain in its action.
2. That it has no depressing influence.
3. That it does not cause constipation.
4. That does not produce nausea.
5. That its effects are more lasting.

I believe it to be the most valuable means of procuring sleep which has yet been introduced into the Pharmacopœia of the asylum physician. The only difficulty is to ascertain the exact dose for each case; but this is obviated by beginning with half-drachm doses, and increasing them by ten grains till the limit is found.—*Lancet, March* 26, 1870, *p.* 443.

18.—CASE OF ACUTE MANIA SUCCESSFULLY TREATED WITH HYDRATE OF CHLORAL.

By Dr. George Crawford, C. M., Port Glasgow.

[The patient was 56 years of age, and fourteen years ago had been confined in an asylum for nine months, on account of insanity. She had a similar attack five years ago, which lasted five months. On the present occasion, when first seen by Dr. Crawford, she had been ill five weeks, during which time she had never slept more than five minutes at a time. Opiates made her worse.]

After what had been done in the case, I considered it a good one for chloral, and determined to give it a trial.

I may state that, before giving the chloral, her pulse was 130 per minute, and the temperature of the body very high.

I gave her twenty-five grains in two ounces of water, at bed-time, for three consecutive nights, and its effects were quite marvellous. The first night she did not sleep much, but the talking was entirely stopped. The second night she slept for nearly nine hours perfectly sound and tranquil, and even during the following day she had several hours of refreshing sleep. The third night was equally as quiet, with as much sleep, and on the following day said she was quite better, and did not require any more of that medicine which made her so sleepy. Immediately after the first dose the pulse began to fall, until at the end of the third day it was down to 90, and during the same time the temperature gradually became natural. She did not complain of nausea, headache, or any other unpleasant feeling during the time she was taking it.

Since that time till now she has remained perfectly well, sleeping at night, taking her food, and attending to all the duties of the household as formerly. —*Medical Times and Gazette, Jan.* 22, 1870, *p.* 93.

19.—ON THE DIAGNOSTIC USES OF ELECTRICITY.

By Dr. J. Russell Reynolds, F. R. S., Professor of the Principles and Practice of Medicine in University College.

Perhaps the most general diagnostic use that can be made of electricity is this: to determine, in a case of paralysis, or loss of voluntary power in a muscle or group of muscles, the cause of that paralysis up to this point, whether it depends upon some condition which shuts off from that muscle the influence of the spinal cord, or whether it be some change which, although it may paralyse the muscle to the will, does not remove that muscle from the influence of the spinal cord. Sometimes it is of very great importance to be able to distinguish between those two conditions, and to recognise that one to which Dr. Marshall Hall applied the term "spinal paralysis." I must therefore occupy your time, for a few minutes, in explaining to you the exact sense in which Dr. Marshall Hall used that term. What he meant by it was, not necessarily disease of the spinal cord, but the separation of a muscle from that organ. It is clear enough that the separation may occur in two different ways; and, further, that disease of the spine may exist, and cause loss of voluntary power, and yet not produce what he termed "spinal paralysis." A muscle may be paralysed by something wrong in the tissue of the muscle itself; by something which cuts through the nerve that should connect it with the cord; by something which destroys that part of the cord from which the nerve arises; by something which destroys or cuts across the cord higher up than the origin of its nerve; or by something which damages the brain. Thus, then, there are five different lesions, or rather, localities of lesions, which may produce paralysis.

What Dr. Marshall Hall meant by "spinal paralysis" was the functional separation of a muscle from the cord. And here let me remind you that there is a condition which does not effect this separation, and yet which has *sometimes been termed* "spinal paralysis." If there be disease of the spinal cord above the origin of certain nerves which supply a group of muscles, there may be perfect paralysis of all those muscles, but there need not be any "spinal paralysis," in the sense in which Dr. M. Hall used that term. The paralysis is one depending upon disease of the spinal cord, but the particular nerves and muscles of which I am speaking, may still maintain their normal relationship to a healthy portion of the cord, and the muscles under those circumstances still preserve their electric irritability.

There is, in this case "cerebral paralysis;" the patient is deprived of the use of some of his muscles; the brain and the muscles are, so to speak, cut asunder; they are paralysed to his brain, but they are not paralysed so far as the spinal cord is concerned, though the lesion is in the cord itself. But if there be destructive change in the cord, at that particular locality from which the nerves of the supposed group of muscles are given off, the condition of those paralysed muscles is very different. Regarded merely in relation to the will, they present no difference—they are simply paralysed; but in the one case they are shut off only from the brain, in the other they lose all that was conferred on them by the spinal cord. Spinal disease exists in both instances, but it is to the latter only that Dr. M. Hall applied the term "spinal paralysis."

There is another way in which spinal paralysis may be brought about—viz., by the division of the nerve between the cord and the muscle, "traumatic paralysis," as it is sometimes called. By a neuroma, or other tumour, or by an accidental injury, a nerve may be damaged or cut through, and then the muscle stands, so far as its electric irritability is concerned, in the same position as in the case where the cord itself is destroyed at the point at which its nerves come off.

1. The most general principle that I can lay down for you in regard to electric irritability, used as a means of diagnosis, is this,—that when a muscle is separated from the influence of the cord, by destruction of its nerve, or by a destructive disease of the cord at the origin of its nerve, it loses its electric irritability, it loses it quickly, and it loses it to all forms of electric irritation. The degree of loss or diminution may vary, but it varies directly in proportion to either the amount of interference between the cord and muscle, or to the degree of damage done to the cord itself. The clearest proof of the truth of this statement is to be derived from the fact, that of all the experiments made by Dr. Marshall Hall, and of all the conclusions he drew from them, whether the rest were right or wrong, this particular one has been regarded as correct by those who have the most carefully investigated the question.

(*a*) In brain disease *per se* there is no diminution in the contractility of the paralysed muscle to the electric current.

(*b*) In spinal disease, which is so situated that it does not destroy or damage certain nerve fibres which come off below the seat of lesion, and pass to certain muscles which may be paralysed, there is no necessary interference with the electric irritability.

(*c*) Spinal cord disease which damages a part of the cord diminishes the electric irritability of the muscles supplied by nerves coming from that portion.

(*d*) Section of a nerve which simply cuts the muscle off from the spinal cord produces a similar result.

2. Having said thus much about the aid which electricity may give to our diagnosis of the locality of a lesion, let me direct your attention to another matter, with regard to which I do not think there is always the clearest understanding. I refer to what one means by the terms "electric irritability," or "contractility," and "amount of electric irritability." Under this term two different things have often been confounded—viz., irritability and power, or readiness of contraction and force of contraction. For instance, take a person who has one of his arms paralysed, and place his feet in a dish in which there is some salt and water, and which is connected with the positive pole of a galvanic battery, and let the negative pole, at your pleasure, be connected with one or the other of two basins, into which he puts his hands. The current will thus pass up his legs and down one or the other of his arms. Then, as you apply the current to the right arm or the

left, you can discover which of those limbs, right or left, will respond to the lowest power. Supposing you have a galvanic battery, and you apply the current from five cells, and this produces no effect on the paralysed limb, but a distinct flicker in the muscles of the non-paralysed limb, you may infer that the irritability is greater in the latter.

3. In that manner you test the true irritability of the muscle—you ascertain its readiness of response to a low power. If muscle A will act to a current of five cells, and muscle B will act only to a current of ten cells, then muscle A is more irritable than muscle B. If the muscles of the right arm will act to a current of lower power than those of the left arm, then the muscles of the right arm are more irritable than those of the left. You must remember the difference of strength between the direct and the inverse current; and in testing the irritability of the two arms respectively, be careful not to send the current up the one arm and down the other, and lose sight of that fact in your interpretation of the phenomena. You often find when applying a strong current of electricity to two limbs, one of which is paralysed and the other healthy, that the muscles of the latter act much more vigorously than those of the former. You are not, however, to infer from such observation that the muscles so acting are more irritable. They are often less irritable than the others, but they are stronger, and when you put them into action they act more vigorously. In the one case you are testing irritability; in the other you are testing power. To ascertain, then, the irritability of a muscle—*i. e.*, to see how irritable it is; you must reduce the strength of the current you employ, whether faradic or galvanic to the lowest point that will produce action. With a more powerful current, all that you will show is that one muscle is stronger than the other; for you lose sight of the finer differences of irritability in the obvious presence of the coarser differences of strength. If we take four or five cells of a galvanic battery, and apply the current, made and broken slowly, to a paralysed muscle, we often find that it will respond much more readily than will a healthy muscle, because it is more "irritable." But if we take thirty or forty cells, or a faradisation machine, we often find that the same healthy muscle will perhaps draw the hand out of the water, while the other (the paralysed muscle) will merely give a little jerk. The healthy muscle in this case, though less irritable, is more strong.

Another diagnostic use of electricity is seen in the distinction between certain imaginary, fanciful, or feigned conditions of paralysis, and those which are real. You are not, as I told you in the first lecture, to infer that a person is shamming because you detect no difference between the muscles on one side and on the other, when the patient asserts that he is hemiplegic, and appears to be so. The great use of electricity in such cases is this: that if you do find a definite, well-marked dlfference between the muscles of the two sides, you are justified in inferring that there is something more than mere fancy; something that cannot be feigned. For instance, it has often been said that, in cases of railway accidents, persons "put on" all sorts of symptoms; and so they do. There is no doubt that many symptoms are deliberately put on. But there are other cases in which people frighten themselves, or are frightened, into believing that there is something much more grave the matter with them than the facts really warrant, and so an injured person often becomes powerless from ideal influence, when not paralysed by disease; and here electricity may be of service. I remember an important case in which a physician and a surgeon in attendance upon a gentleman who was supposed to be paralysed on one side, as the result of a railway injury—although they were his own medical advisers—had grave doubts about the reality of the paralysis. They thought the patient put on or imagined a great deal, and that his paralytic state was more or less fancied if not actually shammed. The persons on the side of the company said, unreservedly, that there was not a particle of truth in the apparent paralysis; that the patient was no more paralysed than they themselves were. And I must tell you that there were certain points about the case, which led one to infer that the man was to a certain extent affecting some of his symptoms. Now here came in the electrical test. He could not move his right arm; he dragged his leg after him; he could not pronate or supinate his hand. Some said he could if he liked; but I would defy him to do what I am going to tell you. To his left arm I applied a strong faradisation, which knocked his arm round with an amount of pain that made him use strong language which I need not repeat. I then applied it to the paralysed arm, passing the current through the pronators. There was not the slightest movement. Now, I do not mean to say, that a very strong man might not, by a very strong effort, have kept his hand still, but I am quite sure be could not have prevented from acting the muscle that was between the two poles of the battery, any more than he could prevent his pupils from contracting upon exposure to light. I used the same current once or twice, and put it on considerably stronger; but there was only the smallest flicker of contraction in the muscles on that side. So with the leg. I applied it to the healthy leg, drew the foot up, and brought forth more exclamation; to the other leg, and the muscles remained perfectly flaccid, without the smallest contraction. Whatever may have been the doubts in that case as to what the man might have put on, I think we may take it for granted that he could not have put on that; for no man could resist, by a simple effort of the will, the action of a muscle to such a current as this. The difference between the irritability of the muscles on the one side and on the other was most striking. I never saw a more marked case. The difference which it made to the man was something very material in the matter of compensation. So you see that electricity may be sometimes used for diagnostic purposes with advantage to the patient as well as to the physician.

Now we have to consider in detail some of the diagnostic uses of electricity.

1. If the contractility of a paralysed muscle is normal, you may infer this: that it retains its normal relationship to the spinal cord; or, in other words, that the spinal cord, in the particular region at which the nerve of that muscle is given off, is not diseased; and that the nerve between the spinal cord and the muscle is not damaged. The cord may be diseased, so that its conducting power is abolished; or the brain may be diseased, so that the will is separated from the muscle that is paralysed; but that muscle, although paralysed, still maintains its normal relationship to the segment of the cord from which its nerves arise, and that segment of the cord retains its central functions.

2. If you find the contractility of the paralysed muscle to be increased, you may infer the same things, but also something more, viz., that there is present an increased irritability of either the spinal cord or brain, commonly due to some increased vascularity of one or the other of those organs. Take, for example, a case of hemorrhage into the brain. Sometimes immediately after an attack of hemorrhage, if you are rash enough to perform the experiment with electricity, you may find that the irritability of all the muscles of the body is diminished, the patient is in a state of more or less marked shock or collapse. After a little time—a few hours or two or three days—you will find no difference between the muscles of the paralysed side and the healthy side; they are just alike so far as their electric contractility is concerned. But in a few days more you may find that the muscles on the paralysed side act to a lower current than those on the healthy side—*i. e.*, that they are more irritable; and you find this change in them coincident with some headache, giddiness, heat of head, and often with a little tendency to clonic spasm or rigidity in the paralysed limb. In this case the increase of irritability is, I believe, due to the hyperemia that sometimes follows such cerebral accidents as hemorrhage, embolism, or the breaking down of a few nerve-fibres from softening. I do not think that electricity will help you further than this with regard to the diagnosis of cerebral disease. My own observations on this special point have led me to the conclusion that the increase of irritability of paralysed limbs in cerebral disease is not dependent on the mere locality of the disease—*i. e.*, on the simple fact that the disease is cerebral; that it is not dependent on the time that the disease has lasted; nor on the degree of paralysis present—*i. e.*, whether the muscles are completely immovable by the will or not; that it is not dependent on the extent of paralysis—*i. e.*, whether the whole limb is

paralysed or only a portion of the limb; that it is not dependent on the presence or absence of sensation in the limb; and that it is not dependent on the presence or absence of spasmodic contraction in the muscles. All these may be eliminated as either necessary or constant conditions of the excess of irritability. But when the excess of irritability is present, you often find tonic or clonic contraction of the muscles, and, associated with that, a little headache or heat of head, and the other symptoms I mentionèd of increased vascularity in the brain-tissue or in its membranes.

The other condition which may lead to increased irritability of a paralysed muscle is that which you meet with in some diseases of the spinal cord, such as hemorrhage, inflammation, sclerosis, or tumour. For instance, when disease is situated in the upper part of the cord, there may be complete loss of contractility in the muscles connected with that part, but an augmented irritability in the muscles lower down. Myelitis, or a tumour pressing upon the cord above may set up a certain amount of irritation, or increased vascularity in the cord or its membranes below, and this leads to an increase in the electric irritability in those muscles connected with the lower portion of the cord. At the same time, you often meet with spasmodic movements, an increase of reflex irritability on tickling the soles of the feet, and an increased contractility on percussion. This condition is not permanent, for usually disease extends downwards, and the contractility eventually becomes impaired.

Sometimes the muscles which have ceased to respond to faradisation exhibit energetic contraction when galvanised. To this condition I shall recur immediately. The electric contractility of muscles is sometimes found to be increased when there is no paralysis in the strict sense of the word; but when there is some weakness associated with, and apparently dependent upon, pain. In the early period of so-called "locomotor ataxy" there is often an exaggeration of electric contractility, and a similar condition may be observed at the commencement of paralysis agitans. In hysterical paralysis, also, the irritability may be either normal or increased.

3. We now come to the consideration of those cases in which the electric contractility is diminished. Several conditions may lead to this diminution. The brain may be diseased, or damaged in such a way that paralysis shall occur, and that eventually the contractility of the muscles shall be diminished. There may be disease in the spinal cord which shall lead to this change very rapidly,—there may be disease in the nerve which shall induce it almost immediately,—the muscle may be in an altered state of nutrition,—or, lastly, the blood of the patient may be altered by some toxic agent, so that the electric irritability of nerve-centres, nerves, and muscles is reduced. Electricity may, to a certain extent, help you in distinguishing between these several conditions.

(*a*) When you find, as the result of cerebral hemorrhage, softening, or tumour, that the irritability of the muscles is diminished, the usual explanation is this: that the muscle has lost the whole or part of its irritability from disuse, which may or may not be accompanied by wasting. When this is the case, a few applications of electricity, repeated at tolerably short intervals, will put the muscles into precisely the same state as the muscles on the healthy side, so far as electric irritability is concerned. You bring them into action, and you improve their nutrition. After two or three applications of galvanism or faradisation—it does not matter which,—the muscles will flicker about as readily as those on the opposite side; but you may go on till doomsday in these cases and not produce the smallest improvement in the paralysis: the muscle does not resume its relation to the will. You simply recall the electric irritability which was in abeyance from disuse. When you cease your applications, you find the patient can move his arm no better; and in a few weeks the muscle again is wasted a little from disuse, and has become somewhat diminished in its electric irritability. When you find that, after several applications of electricity to the limbs that have been paralysed by cerebral disease, there is no restoration of the contractility of muscles, you are warranted in inferring that disease has extended downwards to the spinal *cord.*

(*b*) When the cord itself is diseased, and there is loss of electric contractility, you may find precisely the same relations to disuse; but you may find, in other cases, that there is loss of power and diminution of electric irritability, which are not due to simple inaction, but to true "spinal paralysis." In these latter cases a few applications of electricity effect no change; but if you go on systematically with galvanism, and attend to the general health, you may, after many months of treatment, find that there is some improvement, or even a cure. It is probable that, in these cases, the stimulation of the peripheral ends of the muscular nerves may have some reflex influence on the nutrition of the cord, and may assist in the general process of repair; but when the cord is disorganised, and the paralysis and loss of electric contractility are complete, you can do no good by continued applications. By electricity, therefore, you may speedily decide as to how much of the paralysis is due to disuse; and you may distinguish merely impaired nutrition from actual disorganisation of the spinal cord.

(*c*) The third condition of diminished contractility that I spoke of is, that in which the nerve is damaged between the cord and the muscle from injury, wound, or disease. The most common form in which this direct injury to a nerve is seen is in the case of "facial paralysis," arising from disease set up in the ear, or in its neighbourhood. You there get the features of true "spinal paralysis" of the muscles supplied by that nerve, just as well marked as if you had divided a nerve in the arm, and had produced paralysis of the hand. You find a loss of electric contractility, or a diminution, in direct proportion to the amount of damage done. If the nerve be pressed upon slightly, there will be a certain amount of power left in the muscle, and there will be a certain amount of contractility retained; but if the nerve be cut across, or so far injured or pressed upon that the will cannot influence the muscles, no trace of electric contractility remains. This loss of electric contractility occurs within a few hours after a sudden lesion, but it is gradual in the cases of disease where the interruption of voluntary power is slowly induced. The loss may be partial or complete, and then you get a partial or complete loss of electric contractility—a loss which you cannot restore. You may apply galvanism time after time, but you cannot restore to the muscle the irritability that it has lost, when that loss depends on division of, or irremediable damage to, the nerve. But in certain complex cases, and almost all cases are complex, you may do some good by electricity. For example, a person may have had some disease in the temporal bone, and may have been paralysed on one side of his face, almost completely. You apply electricity to it, and you find perhaps that there is the slightest flicker of contractility about the muscles of the eyelid and the angle of the mouth. Under such circumstances continuing the application, you may find that the condition is improved up to a certain point. The eye, which was wide open, is more closely approximated by the lower lid, and there is less irritation from dust; but you do not cure the case, and you often find that further applications of electricity do no good. Here, I take it, the condition is analogous to that which I described just now as depending on cerebral or spinal disease. The muscle has become weakened from disuse; it has not altogether lost its function, but it has lost it in great measure. From the shock of the accident, or from disease, it may have been placed at once beyond the power of the will, and its subsequent disuse has brought about changes in its nutrition. The paralysis would be permanent if the case were left to itself; but you may remove all that was due to disease, and so, by electricity, sometimes place a patient in much pleasanter circumstances than those he was in before. A few applications of electricity will enable you to decide this question—how much of the paralysis is due to disease, and how much to disuse? I remember a man paralysed on one side of his face for seven years before I saw him, in consequence of disease in the external ear and parotid gland, which had been set up when he was in Australia. His mouth was excessively deformed. The eye on the same side was always wide open, and he had to wear a big glass to conceal the deformity, and also to protect the eye. A few applications of faradisation brought the edge of the lower lid just into contact with the eyeball, but he was never able to close the eye. Another thing which faradisation enabled him to do was to whistle—an accomplishment which by his paralysis he had lost; and as he was going out into the wilds of Australia again, it was, as he said, a great luxury for him to be able to whistle when alone. He was, I think, more grateful for the restoration of his whistling power than even for having the dust kept out of his eye!

(*d*) Sometimes the loss of electric contractility is due to a change in the muscular tissue which may occur primarily: for example, there are cases of wasting and paralysis due to simple exposure to cold, such as certain examples of facial paralysis, some cases of so-called "essential paralysis" in children or adults, and also muscular palsy, the result of blood-poisoning. Cases of "essential paralysis" in the child may, I think, be split up into two great groups. There is one which depends upon spinal disease—of which I am not, at this moment, going to speak to you,—but there is another, to which I wish to direct your attention for a few moments, which comes on from exposure to cold; as, for example, when a child sits down on a cold doorstep, gets cold, and you find one of its lower limbs paralysed. A similar accident happens when a man sits in a railway carriage, and the wind blows upon his face, and one side of his face becomes paralysed; or when he lies under a hedge, and sleeps there all night, and in the morning finds that one of his arms—that one which lay upon the wet grass—is paralysed. In these cases you find that a group of muscles is affected in a particular locality, and often that this paralysis bears no relation to any particular nerve or branch of nerve; the lower part of a limb may be paralysed, and not the upper, or *vice versâ;* the middle part of a limb may be paralysed, and the rest may escape. You often get some paralysis of the glutei and the muscles of the thigh, while the muscles of the foot are all left intact. You may sometimes find that the deltoid is paralysed, and that there is loss of power of moving the arm backwards and forwards, or inwards and outwards, and yet that the hand retains its power. You may find that the muscles about the elbow are paralysed, while those of the shoulder and of the hand are unaffected; and in all these cases there is loss or diminution of electric contractility. I do not believe that paralysis of this distribution ever occurs as the result of central disease of the nervous system. In central disease the distribution of paralysis is such that the disease shows itself the most distinctly in the extremities—*i. e.*, at the distal ends of limbs; you find numbness at the tips of the fingers, and not over the shoulder; loss of power in the fingers, and not in the deltoid. Further, when the whole of a limb is paralysed from central disease, the order of improvement is definite; for example, in the upper extremity, the first place in which power returns is in the shoulder, then in the arm, and then in the hand. In this muscular paralysis, which may come on from some change in the nutrition of the muscle itself, you find an irregular distribution of the paralysis, and an irregularity in the order of cure. The loss of electric irritability is also irregular, and this may aid you in diagnosis. In these cases, when the muscles are primarily affected so as to produce paralysis, the curious condition may often be noticed, that the irritability to a slowly interrupted galvanic current is sometimes distinctly increased; it is greater than that which you find in a healthy limb. But you will find that if you interrupt that current rapidly, the contraction is very much less than that of the healthy limb; and if you take a faradisation machine, you may find that the irritability is completely extinct; the muscles in this state, will not respond in the smallest degree, even to a very high power. In facial paralysis from exposure to cold, in the paralysis from lead, in that of the limbs arising from cold, and also in some anomalous cases of atrophic paralysis of limbs, the precise nature of which I do not think we can state at the present moment,—in all these this peculiar relationship may be noticed. Observe, again, what it is. To faradisation the muscles act not at all, or much more feebly than they should do. The rapidly interrupted galvanic current exhibits precisely the same thing; but if you very slowly interrupt the galvanic current, they exhibit a greater amount of irritability than do the *healthy muscles.* The first of these positions was made out by several observers at about the same time; but the second—that with regard to the rapid interruption of the battery current—was what we have observed in this hospital. You can immediately alter the relation of the muscle to the galvanic current by a more rapid interruption; galvanism then produces no effect at all, although it will act perfectly on those muscles of the patient which are not paralysed, and, as many of you have seen, upon your own. This form of disease seems to place the muscles in precisely the same relationship to the rapidly intermitted galvanic current as to faradisation; but the fact which I do not think has yet received an explanation is this: that the muscles, in this curious condition, are over-sensitive to the galvanic current when it is interrupted slowly. The explanation may be difficult; but the fact is clear enough. When the irritability of a muscle is diminished to galvanisation as well as to faradisation, you have some disease present which is different from that I am describing. You will find such cases very difficult to cure; whereas in the treatment of the former class, the application of slowly interrupted galvanism is rapidly and notably useful, and displays an interesting physiological fact—viz., the gradual reduction of the over-sensitiveness of the muscle to that slowly interrupted galvanisation, and the gradual return of contractility to faradisation and rapidly interrupted galvanism. To-day, for example, the muscles will act to five cells of Elliott's battery, and will not respond to a strong current from Stöhrer's; but next week you will find that you require ten or fifteen of the former to produce any result, and that a much lower degree of the latter will induce some flickering contraction. You go on for another week, and you have to employ a still larger number of cells to produce the same result, and at last you find the muscle in the same condition as the healthy one; and then you find that it has regained its ordinary state to faradisation. This has been seen so often, in cases of lead paralysis as well as in those which are due to cold, that there is no doubt about the fact, whatever may be its explanation; the over-sensitiveness to the battery current is gradually reduced by the application of that current, and the loss of sensitiveness to faradisation is gradually brought back as you employ slowly interrupted galvanisation.

(*e*) Lastly, the electric contractility is diminished by certain changes in the blood—such as anæmia, chlorosis, and opium poisoning. Here the diminution is moderate in degree, but general in its distribution, is little or not at all influenced by electric applications, and is removed only by the improvement of the general health or the elimination of the poison.—*Lancet, April* 16 *and* 23, 1870, *pp.* 539, 575.

DISEASES OF THE ORGANS OF CIRCULATION.

20.—ON THE HYPODERMIC USE OF MORPHIA IN DISEASES OF THE HEART AND GREAT VESSELS.

By Dr. T. Clifford Allbutt, M. A., Cantab., F. L. S., Physician to the Leeds Infirmary, &c.

[The use of opium by the mouth has always been avoided in heart cases, in which, perhaps, as much as in any class of diseases, relief from suffering, and sleep at night are demanded. Dr. Allbutt points out that, as the action of morphia given subcutaneously is quite different from that of the same drug administered in the usual way, we must give up our old ideas as to the danger likely to result from increased venous congestion.]

From small and timid beginnings I have gone forward with this marvellous remedy, until I find myself now justified in using it fearlessly in any form and in any stage of heart and aortic disease. No matter how swollen the limbs, no matter how agitated the pulse, no matter how blue and how turgid the face and lips, I now never hesitate to inject morphia, and scarcely ever fail, even up to the time of the dying agonies, to give relief decided enough to earn the warm gratitude of the patient. At such times one feels the blessing of being a physician.

I use the hydrochlorate of morphia in doses varying from one-tenth to one-third of a grain; I seldom use half a grain, except in such a case as intense pain from angina or intrathoracic tumour. I always begin with one-eighth or one-sixth; and in ordinary cases I find a quarter of a grain the proper dose—in a case, say, of mitral regurgitation with pulmonary congestion in an otherwise healthy adult. The dose is best given in an evening, and should always be followed by perfect quiet in the room. This last is an important element in all cases of injection of morphia. The urine should be examined, and the drug withheld or given with caution if albumen be found. I think, however, there need be no great fear of it during albuminuria only secondary to the heart disease, unless there be reason to suppose that excessive renal congestion be present, and head symptoms at hand.

Once or twice I have injected morphia in small doses to mitigate suffering in patients with heart disease associated with granular kidney, and in whom no head symptoms had appeared. I have done it, however, in fear and trembling, and I think the risk is better avoided.

It is surprising how little the morphia has affected the head in the multitudes of cases in which I have tried it. The condition of the brain in heart disease is often, no doubt, anæmic, and some of the restlessness of the patient, and some of the heart disorder, may at times be due to cerebral anæmia. In such cases one might expect the morphia to calm by bringing about the sleep, or rather the stupor, of cerebral congestion;—but this explanation is insufficient. On the contrary, in aortic disease with marked symptoms of encephalic anæmia, I have seen less good result from the hypodermic use of morphia than in heart cases of other kinds. But in cases of mitral regurgitation, when the head is full of venous blood, and distress and stupor seem striving together, then I have found great benefit from the injection, for it stills the distress in the chest, and by staying the tumult of the heart it seems to allow the sinuses to empty themselves, and to allow of the establishment of a true soporific anæmia. I think, moreover, that the unwonted blessing of peace brought by the drug so tranquillizes the system, that even those persons find solace and rest from its use, when labouring under heart disease, in whom, under other circumstances, morphia would rather annoy the medulla than tranquillize the cerebrum. I scarcely ever remember that morphia caused disturbance of the stomach or other inconvenience in the cases I am describing. As in cases of severe pain, so it seems that in cardiac disturbance the intolerable distress "carries off" the troublesome qualities of the drug. Its effects, again, are not merely comforting, but are curative so far as such cases are to be cured. An injection of morphia three or four times a week, by tranquillizing the heart and allowing the circulation to recover its freedom, sets free also the organs which are oppressed, and the system can once more find something like its balance. Thus relieved, the patient may with incessant care enjoy some respite from his malady, and the occasional use of morphia may put off the day of its return. All this bears very closely on the difficult question, How is it that a man having a given lesion of the heart goes on sometimes for a year or two without an "attack" of general suffering, and after recovering from this may again go on for a longer or shorter while before the "attack" is repeated, the heart lesion remaining always the same? There seems to be a gradual accumulation of deficient work, which does not throw the patient over until it reaches a certain amount. Gradually and indirectly the morphia injection does much to restore balance of function; directly and immediately it seems to affect the chest almost alone. The face generally becomes less turgid and its expression calmer. The heart, which for days had been thumping out of all rhythm, or striving against an unequal weight of blood, becomes tranquil and rhythmical; and this, whether it be a direct result of the morphia or not, is the chief one, and that upon which the rest seems to hang. More haste, worse speed, is as true of heart work as of any other, and it seems clear that the hurried labour of the overtasked heart is not compensatory, but is mere blindness and bewilderment. After injection the insufferable precordial distress ceases, and the heart gaining time and rhythm gains power. The effect upon the pulmonary circulation is very striking, the congestion and secretion of the lungs being lessened, to the unspeakable solace of the patient.[*] The quick, shallow, anxious "cardiac dispnœa" gives way to a deeper, slower, and easier movement; the cough falls, not from want of sensibility, but from relief of oppression; the overweight of blood oozes slowly onwards, and the patient, who has been tossing in misery, feels the first tranquil sleep he has enjoyed for weeks. On awaking he is conscious of an ease he has not felt for long, and the good effects are often as well marked, and sometimes better marked, the second night than the first, so that in ordinary cases an injection every alternate night is sufficient. The injection has little or no direct effect upon the anasarca or the urinary secretion, but only gives occasion for their relief by other means. The venæ cavæ are no doubt unloaded, but the state of the kidneys and legs is too confirmed for immediate change.

As regards the class of cases in which the morphia is useful: it gives the most striking relief in angina with diseased coronary arteries, &c., in neuralgic distress from intrathoracic tumour, and in mitral regurgitation. It is very valuable also in small doses in so-called "irritable heart," whether this be due to weakness of the organ or instability of its nerves. It is less useful in disease of the aortic valves, and I think it is less valuable in mitral obstruction than in mitral regurgitation. In aortic disease however, where the heart is big and pumping, it gives much ease.—*Practitioner, Dec.*, 1870, *p.* 342.

DISEASES OF THE ORGANS OF RESPIRATION.

21.—ON BRONCHITIC ASTHMA.

By Dr. Hyde Salter, F. R. S., Physician to Charing-Cross Hospital.

[A pure case of asthma is one in which, if the spasm is relieved all symptoms of dyspnœa are gone. This is not the form of the disease, however, which is most common, and must be distinguished from bronchitic asthma.]

The diagnosis of any case of asthma involves two things, first, the determination whether the case is one of asthma or not; and secondly, if it is asthma, what particular variety of the disease it is. With the view to treatment, it is not enough for you to determine that the symptoms are those of asthma; when you have determined that, you have only half done your work: you might be perfectly correct so far, and yet your treatment might be altogether wrong. The radical treatment of asthma depends far more upon what variety it is than upon the mere fact that it *is* asthma, and for this reason—that the radical treatment is the treatment of the cause, and the cause determines the variety. Until, therefore, you know the variety of the disease in the case you are dealing with—in other words, until you know what cause or causes lie at the root of it,—you cannot hope to treat it successfully or conclusively. You may work away at the asthma as long as you like; but as long as you are merely treating the asthma, you are merely treating a symptom, and your treatment will be only palliative. Suppose, for instance, I have a case of bronchitic asthma; I shall never see the end of the asthma till the bronchitis is subdued which excites it and keeps it up. Or suppose I have a case of peptic asthma, I shall never see the end of the asthma till the dyspepsia is removed, or the patient put on such dietetic rules as will enable him to steer clear of all offence in the direction of the stomach. Of no two diseases is the treatment more different than of these two varieties of asthma. In relation to therapeutics they are as wide asunder as the poles. The mere palliative treatment, no doubt—the immediate treatment of the asthmatic dyspnœa,—would be the same in both; but in their radical treatment they have nothing in common.

How, then, shall we determine in any given case of dyspnœa—whether, in the first place, true asthma is present? and, in the second, if present, whether it is of the bronchitic variety?

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[*] It is the administration of "an opiate" during the clogged state of the lungs which will excite the most serious doubt. We cannot, however, reason in the least from morphia by the mouth to morphia by the skin; the remedies are quite distinct in their results. I have never dared to inject morphia in bronchitis but shall not wonder if it is done before long.

It is, no doubt, a difficult thing to give a concise and simple definition of the essential constituent evidences of asthma—such a definition as it shall be impossible to quarrel with, contained in half a dozen words, yet inclusive of all that is essential, and containing nothing that is nonessential. But I think if we say that asthma is "paroxysmal dyspnœa, accompanied by sibilation," we shall be pretty near the truth. If we go beyond this, we pass from a definition to a description, and shall have to increase our preciseness by a series of qualifications and negations. The only direction in which I think such a definition could possibly be imperfect would be in the direction of bronchitis. It would exclude cardiac dyspnœa, for that is not accompanied by sibilation; it would exclude the dyspnœa of emphysema, for that is neither sibilant nor paroxysmal. But would it exclude the dyspnœa of pure bronchitis? I think it would; for I do not think the dyspnœa of bronchitis can ever be called truly paroxysmal. No doubt it is worse at one time than another; no doubt in every severe attack of bronchitis there is a period at which the dyspnœa is at its height; no doubt exertion may at any time aggravate it. But I do not think it can be called truly paroxysmal. We should render our definition much more complete in this direction if we could add to the word "paroxysmal" the word "recurrent" or "periodic." But this we cannot do; for asthma may occur once and only once, and then the paroxysm is not recurrent: it may also be entirely free from any trace of periodicity. Let us be content, then, with our definition, and conclude that whenever we have "dyspnœa truly paroxysmal, attended by sibilation," whatever else is present, asthma is present. And now for the second question—Whether asthma, if present, is of the bronchitic variety.

There are three circumstances on which I am in the habit of depending for the determination of this point, and I think almost any one of the three would be sufficient for its settlement; certainly the three united would be absolutely conclusive. The first is, whether the asthma is a winter asthma; the second, whether causes of catarrh are the causes of the attacks; and the third, whether the expectoration is purulent or not. If these three questions are answered in the affirmative, there is no doubt whatever that the asthma is bronchitic; and it necessarily almost invariably happens that when one of them is affirmatively answered the other two are also. The restriction of asthma to winter points to its bronchitic nature, because the agencies at work in winter—depression of temperature, humidity, sudden changes—are amongst the commonest causes of bronchitis. Its production by the causes of catarrh points to its bronchitic nature on exactly the same principle; while the purulent character of the expectoration derives its diagnostic value from the fact that pus is never thrown off by a mucous membrane unless that membrane is hyperæmic. In asthma unassociated with bronchial inflammation I believe the expectoration is never purulent.

If, then, I find a case in which dyspnœa is the prominent symptom, in which that dyspnœa is clearly paroxysmal, in which it is accompanied by musical râles, in which there is a winter periodicity, in which the causes of the attacks are chiefly those of catarrh, and in which the expectoration is purulent, I come to the conclusion that I am dealing with a case of bronchitic asthma.—*Lancet, Jan.* 29, 1870, *p.* 147.

22.—THE CHIEF CAUSES OF HOARSENESS AND APHONIA, WITH HINTS ON TREATMENT.

By Dr. George Johnson, Professor of Medicine in King's College, and Physician to King's College Hospital.

There are cases of purely nervous or functional, or, as they are sometimes called, hysterical aphonia. The voice may be reduced to a whisper, and even that is sometimes inaudible. On looking into the larynx, we see no evidence of structural change, but when the patient attempts to vocalize we find that *the vocal cords* remain motionless, or that they move very little. This nervous aphonia often comes on suddenly, and it often passes away as suddenly as it came. The best treatment for it consists in the application of electricity directly to the larynx by means of Dr. Morell Mackenzie's "laryngeal galvaniser." The shock excites spasm and a scream, and the cure is sometimes very rapid. I have cured several of these cases at a single sitting, and one by a single shock of electricity. A boy, about twelve years of age. was much frightened, and nearly drowned, by falling into a pond. From that time he completely lost his voice, his intellect being unimpaired. When I saw him he had not uttered an audible sound for two years. I saw that his larynx was healthy, and I determined to apply electricity. The first shock elicited a loud scream, and at once he recovered his speech.

In most cases it is necessary to apply the electricity again and again before the cure is complete, and in some cases the treatment is unsuccessful, but these are comparatively rare. When the general health is impaired, treatment should be directed to remedy this while the electricity is being employed.

It is remarkable, but quite intelligible, that when, from any cause—a growth upon one of the vocal cords, or inaction of the muscles—the glottis remains partly open during vocalisation, the air escapes so rapidly during the expiratory act of speaking, that the patient is often compelled to draw in a fresh breath before he comes to the end of a sentence. In consequence of the patulous state of the glottis, there is a rapid escape and waste of air, and the chest is soon emptied.

There is a form of aphonia or weakness of voice which I look upon as the result of muscular fatigue and weakness. I have seen a considerable number of these cases, and most of the patients have been clergymen. The patient begins to speak in a clear and loud voice, and he continues to do so for a variable time; but after speaking or reading aloud for, it may be, a quarter or half an hour, the voice becomes feeble, and it may soon be reduced to a whisper. At the same time there is a feeling of fatigue, and sometimes positive pain in the throat. With these symptoms we may find, on looking into the larynx, no trace of structural change, or only slight congestion and redness without swelling. A common cause of this form of dysphonia is overwork of the larynx, from frequent preaching and reading in large churches. I have known it to result from over-exercise of the voice in singing, from straining of the voice by the habit of loud talking in the midst of noisy machinery, and from violent efforts in giving the word of command.

In some instances this peculiar form of laryngeal weakness has followed upon an inflammatory attack. It seems probable that inflammation may some times extend from the mucous membrane to the muscular structures beneath, and thus the nutrition and the tone of the muscles may be impaired. This is the more likely to happen if the larynx be much exercised in speaking or singing during an attack of catarrhal inflammation.

The best treatment for these cases consists in rest for the larynx as the organ of speech, change of air and scene, and a general tonic regimen. The daily application to the larynx of a saturated solution of tannin in glycerine often does good. Tannin lozenges, too, may help to give tone to the feeble voice, and the combination of iron with small doses of strychnia is sometimes useful. I have tried galvanism, but I have hitherto seen no benefit from its use in this class of cases.—*Medical Times and Gazette, Jan.* 15, 1870, *p.* 61.

23.—THE CAUSES AND TREATMENT OF CYNANCHE TONSILLARIS.

By Dr. F. P. ATKINSON, late Surgeon St. Bartholomew's Hospital, Chatham, and Royal South London Dispensary.

[The sum of the whole matter with regard to the treatment of quinsy is, that nothing is of much use, and that cases generally do as well if allowed to run a natural course. Dr. Atkinson having suffered several times from quinsy, had his attention especially directed to the subject, and he states that his cases are generally comparatively well on the third day.]

The predisposing causes of quinsy are—want of tone about the system generally, owing to excess of mental or bodily exertion or long-continued fasts, chronic dyspepsia, imbibition of alcohol before going into the cold night-air (congesting as it does the mucous membrane of the throat and stomach). The exciting cause is cold producing suppression of perspiration. The materies morbi here selects the tonsil, the same as it does, in gout, the great toe. I do not at all hold with it being the result of cold acting directly on the throat, for then laryngitis would be a much more common accompaniment than it now is; besides, in my own case, I noticed that the attacks came on most frequently when I took most care in wrapping up my throat; while exposure to night-air, and want of precautions, seldom seemed to produce an injurious effect. Moreover it appeared, however careless I might be directly after one attack had passed off, though in a weakened condition, a second never followed.

The treatment I prescribe is the following:—Bicarbonate of potash, one scruple; powdered guaiacum, ten grains, or tincture of guaiacum, half a drachm; mucilage, as required; water to the ounce. To be taken with fifteen grains of citric acid three times a day, in a state of effervescence. A gargle consisting of twenty minims of tincture of iodine to the ounce of water (to be used by being held in the mouth and the head shaken from side to side). Three or four glasses of port wine daily, and plenty of beef-tea. If the weather is fine, I order my patient to take a little gentle exercise in the open air. No other application is required for the throat than that mentioned. Purgatives I do not consider necessary, since as soon as the disease is over the bowels regain their proper tone, and become perfectly regular.

The advantage of the above line of treatment may be shown by relating the two following cases. While on a visit to a friend some two years ago, I was asked by a gentleman to see his brother, who was suffering from a bad attack of quinsy. I found him in bed with poultices and flannels round his throat, looking the very picture of wretchedness. He could neither speak nor swallow without great difficulty. I ordered him to get up at once, to throw off all wraps from his throat, and take gentle exercise in the open air. The medicine prescribed was the same as mentioned above. On the second day he was able to go off to his office, feeling comparatively well. A day or two after this a gentleman next door to where I was staying was taken with the same thing. He was kept to his bedroom; had mustard and linseed-meal applied to his throat; in fact, I may say, went through the usual line of treatment, and the result was that he was ill for more than a week.

Persons who have had quinsy before, which has usually run on to suppuration, are perfectly incredulous when I tell them they will be well in three days; but results almost always prove the correctness of my statement.

Of course where suppuration has commenced (as shown by the pain in the ear), the treatment is utterly unavailing, and I then stop all medicines, and simply administer wine and beef-tea.

I have tried almost every kind of treatment upon myself, both general and local, and I can say most positively that this will be found the best. I do not really think I am stating too much when I say that it is almost a specific. At any rate I shall be quite willing to leave it for my professional brethren to disprove or endorse the opinion held.—*Practitioner*, *Feb.*, 1870, *p.* 90.

24.—THE MORBID ANATOMY OF CROUP.

By Dr. George Johnson, Physician to King's College Hospital.

I have gradually arrived at the conclusion that English writers on croup have confounded two very different diseases. They describe croup as an inflammatory non-contagious disease, resulting usually from exposure to cold, more common in northern latitudes and in cold seasons than in the south and *in the summer*, and apt to recur year after year in the same subject, although usually in a milder form. The disease is to be treated by warm baths, warm fomentations to the throat, steam inhalation, and nauseating doses of ipecacuanha or antimony. Some authors advise mercury to be given. If the disease prove fatal, false membranes are described as occurring in the larynx, and often extending into the trachea and bronchi. In this account we have the history, the symptoms, and the treatment of acute catarrhal laryngitis; but the morbid anatomy is that of diphtheria, a disease which has an entirely different history. The first English writer who described the false membranes as the distinctive feature of croup was Dr. Home, whose pamphlet "On the Nature, Cause, and Cure, of Croup" was published in 1765. He gives a brief history of the first two cases in which he observed this striking anatomical change. The first case was that of a boy, aged 7, who died after a few days' illness with symptoms of croup. Four days after the death of the boy, his sister, aged 5, was seized with similar symptoms, and died suffocated on the third day. In both cases, false membranes were found in the larynx and trachea. The fact of two cases occurring in quick succession in the same family would alone render it probable that the disease was diphtheria, and not inflammatory croup. The probability is still further increased by the fact that in the second case the tonsils were swollen and covered with mucus, and there was some difficulty in swallowing. From that time to this there has been a tradition amongst English writers that an exudation of false membrane is the usual result of inflammatory croup in children. Bretonneau refers to Dr. Home's cases of croup as examples of "malignant angina," which is one of his synonyms for diphtheria. (*Memoirs on Diphtheria*, New Sydenham Society, p. 107.)

Dr. Cheyne's work "On the Pathology of the Membrane of Larynx and Bronchi," published in 1809, has been a great authority on the subject of croup. That he met with cases of diphtheria is evident, from his statement that he had seen several children whom he would have supposed to be suffering from the second stage of croup, but in whom, upon examination, he discovered what he calls "sloughs on the tonsils and uvula." The children died; and, although the bodies were not examined, he expressed his belief that, since the cough, voice, and breathing were those of the second stage of croup, "the larynx would have been found lined as the fauces were."

It is only during the last few years that diphtheria has been recognised amongst English practitioners as a distinct specific, infectious and sometimes epidemic, disease. Meanwhile, the French pathologists Bretonneau, Trousseau, &c., have given a complete history of diphtheria. Croup they describe as a disease characterised by an exudation of false membrane, forming a part of the history of diphtheria, and quite distinct from catarrhal laryngitis, which Bretonneau calls "stridulous angina" and "tracheitis," and Guersant designates "stridulous laryngitis, or false croup." There is here no question of laryngismus stridulus, or spasmodic croup. (See the *Memoirs on Diphtheria*.) Guersant remarks that the cough is loud and sonorous in cases of stridulous laryngitis; while in membranous laryngitis or diphtheria it is hoarse and stifled by the exudation. The voice, too, in this latter affection is not simply hoarse, but almost suppressed.

My attention was first specially directed to this subject by finding no false membranes in the air-passages after death from acute catarrhal laryngitis in children. Mr. Porter, in his book on the *Larynx*, mentions three cases of fatal croup without false membranes in children, aged respectively 5, 4½, and 2¼ years. Sir Thomas Watson says "there are a few cases in which this adventitious membrane is not formed at all; the inner surface of the windpipe is seen to be merely reddened and tumid, and covered with viscid mucus; or, perhaps, with a shred or two of concrete albumen here and there." Then I have occasionally met with cases of supposed inflammatory croup in which I found during life diphtheritic exudation on the tonsils, soft palate, or pharynx. With these appearances were associated other indications of the true nature of the disease; perhaps evidence of infection, discharge from the nostrils, swelling of the glands under the jaw, albumen in the urine. In some cases, the evidence is less complete. Most writers on diphtheria describe cases (and

I have seen some) in which there is either no exudation visible on the fauces, or there is a scanty secretion, which soon disappears, while the exudation within the air-passages increases and destroys life. And, again, there are other cases in which the diphtheritic exudation begins in the air-passages, and never extends to the fauces. In such cases, the diagnosis may sometimes be difficult. (See Trousseau's *Clinical Medicine*, vol. ii., pp. 486–7, New Sydenham Society.)

Our present knowledge of this subject warrants us, I think, in stating positively that two distinct diseases have been confounded under the name of croup by many English writers. 1. Acute catarrhal laryngitis. This, in children, is inflammatory croup; and, whether it occurs in children or in adults, the only structural change in the larynx and trachea after death is congestion and swelling; sometimes superficial abrasion of the mucous membrane, with mucous or puriform exudation on the surface, but no tenacious false-membrane. 2. Diphtheritic croup, which, whether it occurs in the child or in the adult, is attended with the formation of a more or less abundant and tenacious false membrane in the air passages. The exudation of false membrane depends, not upon the age of the patient or the intensity of the inflammation, but upon the specific character of the disease; so that the presence of the false membrane after death would suffice, in a doubtful case, to determine the nature of the malady.

One circumstance that has helped to perpetuate error with regard to the morbid anatomy of croup has been the fact that inflammatory croup is a far less fatal disease than diphtheritic croup. Most cases of the former recover when early and judiciously treated, while of the latter by far the greater number die. Therefore, after death with croupy symptoms, false membranes are more frequently present than absent. Both Home and Cheyne report several cases of recovery which were nearly certainly cases of simple laryngitis or inflammatory croup.

The practical importance of distinguishing acute catarrhal laryngitis or inflammatory croup from diphtheritic disease of the air-passages is manifest, when we consider that the treatment which usually puts a stop to the former disease, is unsuitable and even injurious in cases of diphtheria, a disease which requires an entirely different method of treatment, and in which local remedies are especially valuable.—*British Medical Journal, Jan.* 1, 1870, *p.* 4.

25.—THE LOCAL TREATMENT OF CROUP.

By M. Adolph Weber.

A knowledge of the power possessed by lactic acid to dissolve fibrinous exudations induced the author to try it in cases of croup. At first he used it only after the operation of tracheotomy, partly with a view to keep the tracheotomy tubes clean, and partly hoping that the lactic acid might affect the membranes which extended downwards into the bronchi. The results were so favourable in both respects that he proceeded to try it in severe cases of croup before having recourse to tracheotomy. Since then he has not once had occasion to operate, and has not lost a single case of croup. In some very severe cases in which inspiration and expiration were equally obstructed, and the conditions of the fauces indicated an abundant fibrinous exudation in the trachea, the difficulty of breathing was completely relieved within seven to ten hours of using this remedy, and two to three days after no trace of the local affection remained.

During the treatment there was not, as is generally the case, an expectoration of tough membranous sputa, but gradually the whistling barking inspiration and expiration were replaced by distinct rattling noises; the voice, before quite suppressed, began to assume a hoarse timbre, and considerable quantities of loose white frothy phlegm were expectorated during the fits of coughing, until at last the struggle for breath quite ceased, and the disease assumed more the character of a catarrhal affection of the throat.

The treatment consists in the local application of the remedy to the windpipe by means of inhalation. The patient is made to inhale a solution of lactic acid (15 to 20 drops in half an ounce of water), at first every half hour, and afterwards, when the respiration improves, every hour or every two hours a solution of 10 to 15 drops in half an ounce of water.

The inhalation is discontinued as soon as the dyspnœa has subsided, and to promote expectoration camomile tea is exhibited.

In using the inhalation care must be taken that the vapour does not affect the eyes or face.

With this treatment was conjoined the internal exhibition of carbonate of soda every half hour or every hour, which was thought to exert a beneficial effect upon the exudation.—*Medical Times and Gazette, Jan.* 22, 1870, *p.* 95.

26.—HYDRATE OF CHLORAL IN WHOOPING-COUGH.

By Alex. Maxwell Adams, Esq., Surgeon 2nd Regt. Lanark Militia.

I have lately been treating severe cases of whooping-cough very successfully with small doses of the hydrate of chloral. In children of about six years old, five grains given two or three times daily, in a little syrup and water, will usually mitigate the severity of the paroxysms. As often happens, if the cough is not very distressing during the day, but increases in violence after the child is put to bed, then about six grains given only at bedtime will in most cases ensure a comparatively quiet night. Such doses do not seem to produce drowsiness, nor any bad effect whatever. I have been using it in my own family and elsewhere; have watched its effects very closely, and am satisfied that, where the cough is unusually severe, and likely in consequence to lead to other complications, it will prove a most invaluable remedy. I have also been using the solution of the peroxide of hydrogen in this complaint, as recommended by Dr. Richardson, and find it likewise a good and safe sedative, but not nearly so efficacious in severe cases as the hydrate of chloral. In some of my cases I have been giving the solution during the day, and a dose of chloral at bedtime, with marked benefit.—*Lancet, Feb.* 5, 1870, *p.* 212.

27.—ON THE THEORY OF COUNTER-IRRITATION.

By Dr. Francis E. Anstie, Senior Assistant Physician to Westminster Hospital.

[The indiscriminate use of blisters in such cases as pneumonia, for example, in the hope of controlling the inflammation, is not only wrong, but almost ludicrous (not for the patient).]

Who that has made acquaintance with average practice will deny that numbers of medical men still lean with blind dependence upon such remedies in such cases? They are the refuge of the destitute, the one haven that seems open in stress of dirty weather!

Let us now examine the counter-irritation theories of the orthodox, expressly excluding Dr. Ross from that respectable company. Those who accuse young medicine of wanton heresy in this matter seem to think that the old system was self-consistent, and was merely the practical working out of a principle which equally holds good under the ancient and the modern physiology. I think it is not difficult to disprove this idea. There are, in fact, two main theories which have been vaguely held at various times; now one, and then the other predominating in the minds of the adherents of counter-irritation; namely, the theories of *depletion* (in a mainly mechanical sense) and of *derivation* or *revulsion*, which was for the most part a vitalistic and ontological idea. The first of these is that adopted by Dr. J. R. Bennett in his able article, and I must confess that it appears to me to offer the only respectable defence that can be adduced for the commonest of all uses of counter-irritation: viz. the employment of a severe skin-irritation to relieve a deeper organ embarrassed with acute inflammation. It rests on the maxim, Ubi irri-

tatio, ibi fluxus, and presumes that the congestion produced by irritating the skin implies the withdrawal of so much blood from the part which is unduly engorged. Taken in this sense "counter-irritation" includes, of course, not merely blisters, turpentine stupes, mustard plasters, and other *painful* applications to the skin, but also mere hot fomentations, and all other means by which the skin can be artificially congested. I shall not stop here to scrutinize the clinical facts upon which Dr. Bennett and those who think with him rely for proof that such external remedies do reduce the congestion of deep-seated organs, and thus lessen inflammatory processes, hasten absorption, &c. That criticism must be deferred to a future paper. But granting for a moment the therapeutic fact, and granting to the full that hot fomentations, equally with blisters, have the power to produce more or less considerable skin-engorgement, I have to ask a further question:—How can you assure us that the only common property of blisters and fomentations, in virtue of which they can be supposed to relieve the congestion of distant organs, is that of congesting the skin? It is at least abundantly conceivable that the effective common property is that of stimulating the peripheral nerves and (by reflex action) the vaso-motor nerves of the distant organ. On the other hand, there exists one well-known and most powerful objection to the depletion theory, namely, the enormous difficulty of supposing that the depletive action would be exerted to any greater extent upon the inflamed organ than upon the remainder of the circulation? while, unless this were the case, it is impossible to understand how the depletion actually exerted on the organ we desire to reach could be sufficient to cause any appreciable relief from mechanical pressure. Let us try to realize the facts, approximatively. We will suppose that a pneumonic lung, in the stage of red hepatization, contains from six to eight ounces more blood than usual—surely not an extravagant hypothesis. We will assume that by the application of a blister, six inches square, we are able to at once overfill the vessels of the skin to the extent of three or four ounces, and during the ensuing twenty-four hours to extract one ounce of serum from them—assuredly a liberal computation. What follows? why that we withdraw from the aorta and vena cava the above-named bulk of blood, scarcely any of which will come directly from the inflamed lung, the quantity of blood in which will therefore practically be only diminished in the degree of its proportion to the general mass of circulating fluid. But even this gives too flattering an estimate of the effect likely to be produced; since the paralytic dilatation of the vessels of the inflamed organ may only too probably persist, in which case one must suppose that the part would quickly re-acquire its exaggerated complement of blood under the necessary conditions of mechanical pressure within the chest.

Such are the difficulties of the depletion theory at one end of the scale, in the case, namely, where the inflamed organ is anatomically so remote that no direct relation can be traced between its vessels and those of the skin which we irritate. A precisely opposite difficulty occurs where the organ which we aim to affect is very near, and pretty closely connected (vascularly) with the skin on which we act: here we may indeed affect the inflamed organ, and that very powerfully; but how can we assure ourselves that the paralytic dilatation induced in the skin-vessels will limit itself accurately to them, and may not extend to and aggravate the condition of the deeper vessels? Doubtless we may figure to ourselves a kind of typical case, in which an irritant, acting upon skin supplied by vessels connected with the vascular network of the diseased organ, shall be just far enough from the latter, and mild enough in operation, to affect *only* the skin-vessels, converting them into dilated reservoirs into which the blood from the engorged part may overflow. And upon the depletion theory this class of cases, one would suppose, must include all the instances in which counter-irritation is useful. But it would then altogether fail to explain the asserted benefits of the treatment in pneumonia, or in affections of the ovaries, &c.

The other principal theory on which the routine use of counter-irritation has been defended is that of "superseding one morbid action by another," which Dr. Dickinson believes to be "at the bottom" of the practice. I believe that to the largest extent this has been, and still is, the case; and I regret the fact, for it is not creditable to the philosophic education of the profession. The theory really is a "relic of notions belonging to times which were antecedent to the birth of scientific physiology:" and (*pace* Dr. Bennett) I must repeat my conviction that it is still the "leading idea of counter-irritation" for very many practitioners. It is of little use to contend that the mass of practical physicians and surgeons are quite guiltless of any predilections for mystical or metaphysical methods of reasoning about medicine; the fact is, that they inherit from their predecessors a traditional language and traditional forms of thought, which unconsciously fetter them to a far greater degree than they are aware of. Nay, more, I cannot help remarking that even Dr. Bennett, though he takes, on the whole, what seems to me the far more scientific standpoint of the *depletion* theory, has still a lingering tendency towards the *substitution* theory. He quotes the *metastases* of disease, in illustration of the possibility that counter-irritation may produce effects at long distances; and he makes the same strange application of Hippocrates' maxim (that when two pains occur at once, in different parts of the body, the greater will annihilate the other), which was a fruitful source of confusion in the speculations of mediæval physicians. Dr. Dauvergne (with much of whose paper I am obliged to disagree) has well exposed the fallacy of applying the above maxim to the case of inflammations. "Pains," he says, "are not inflammations, nor even congestions, and to obscure or mask a thing is not to divert or to destroy it. Yes, the old man of Cos was right when he said that a stronger pain can mask a weaker, but he was talking of a phenomenon of sensation." To me it seems clear that no inference can logically be drawn from the one case to the other, except on the basis of exploded vitalistic theories, which regarded disease as a distinct and hostile entity, whose assaults upon the organism were resented by the voluntary action of a vital spirit. And surely, the whole idea of "metastasis" is nothing more than a relic of the same school of thought. Even in the case of the so-called migrations of gout, there is nothing which truly deserves the name of metastasis, for the gouty taint equally pervades the whole organism, even at the moment when its inflammatory manifestations cease at one spot and commence at another. But to apply the general principle of substitution to the artifical treatment of the numerous inflammations which depend upon fixed morbid deposits or mechanical mischief, as is constantly done, *e. g.*, in the case of pneumonia depending on heart disease, or meningitis depending on tubercle, seems to me, as it does to Dr. Dickinson, entirely unreasonable; nor do I believe that it would ever be done by one who had fairly shaken himself free of the ontological view of disease which is still copiously represented in our medical language by such luckless phrases as "elimination," and the like.

But it is time to turn to the consideration of Dr. Ross's theory, which differs essentially in character from both of those which have been noticed. In the first place, Dr. Ross is neither consciously nor unconsciously a vitalist. He does not regard disease as an entity, to be hustled or coaxed out of the body by force or pious fraud, and he therefore naturally rejects the substitution theory. Next, he refuses to admit the depletion theory, on the double ground that the machinery of relief which it assumes is neither demonstrable nor apparently possible, and that mere depletion would not account for the clinical facts. He draws out a series of "empirical laws" which are a rough, but, as he thinks, sufficient representation of the main clinical facts; and these laws sufficiently agree with the proposition which he puts forward as a "main intermediate proposition between the theory and the practice of counter-irritation," viz., that irritation of one part of the body tends to stimulate the textures in its vicinity. Finally, he propounds the theory that counter-irritants exert an influence always *stimulative* and not *depressing* in *tendency*, and that this influence is exerted, for the most part, not through blood-vessels, nerves, or any special structures, but through *continuous, and also through contiguous, parenchyma*. I shall not at present revert to the discussion of Dr. Ross's empirical laws, because that subject belongs to the domain of clinical observation, and I must confine my present remarks to matters of physiological theory, reserving to a future occasion the criticism of the clinical evidence which has been adduced.

I am anxious, at present, to conclude the history of the theoretical part of the recent discussion by explaining the hypothesis put forward by myself, which is as follows:—1. It can hardly be doubted that if so-called counter-irritants are to do any good in the *early pyrexial* stages of inflammations, they must do so by the exercise of an influence which contracts the arterioles, thus heightening the arterial blood-pressure and relieving the stress on the capillaries. 2. But all experimental evidence goes to show that *strong* irritation (strong, *i. e.*, either from the virulence of the agent, or the directness with which it is applied to the suffering part) tends to produce, not contraction—or this only momentarily—but paralytic dilatations of the arterioles, and passive overfilling of the capillary web. 3. Hence it would appear that if the more powerful stimulants ever do good in the acute stages of inflammation, it can only be when they are applied at such a distance that their influence falls very gently, and much diluted, on the part aimed at. 4. It would seem probable that the effect of milder skin-*stimulants* would be equalised with those of *irritants*, on the condition that they were applied nearer to the engorged organ, or to a larger surface of the skin; in either case the *quantity* of the influence would make up for the lack of *intensity*.

As far, then, as regards the possible benefits of skin-excitation on the *early stage of acute* inflammations of distant organs and tissues, my theory considers that all these efforts are produced by a *stimulative* action on the *vessels* of the diseased part.

5. The case of *chronic* inflammations, with no or with little pyrexia, was not sufficiently dealt with in my former paper, owing to limited space. Dr. Ross has truly remarked that the tendency of modern practice is, on the whole, towards restricting the use of counter-irritation to the treatment of the chronic forms and stages of inflammation. He points out that in the pathological stage which succeeds to that of acute pyrexia and constantly increasing engorgement, the inflamed part is the scene of abundant vital movement (cell growth, proliferation, &c.), which, however, is of a low type. It is upon this, he thinks, that the stimulating influence of counter-irritation acts with good effect; it substitutes for this profuse but debased activity a more restrained but higher type of formative action. I now beg to say that so far as counter-irritants can do good in this stage of inflammatory diseases, my theory is identical with that of Dr. Ross as to the effect produced, the only question left open is that of the channel of the influence. On that point, as will be seen directly, I do not agree with him.

6. The case of *neuralgic* affections appears to me to throw direct light on the *modus operandi* of counter-irritants in inflammatory diseases. The remarkable utility of blisters in neuralgia is a long-established fact; but my own observations lead me to think that these remedies as frequently do harm as good, from a wrong mode of application. I have repeatedly found that blisters applied directly to the site of the pain if anything *aggravate* the suffering; but, on the other hand, if they are applied to a posterior branch of the spinal nerve-trunk from which the painful nerve issues, a reflex effect is often produced of the most beneficial character. For example, a blister applied over the *posterior* branches of the intercostal nerves is a powerful remedy for pain situated in the course of anterior branches towards the front of the chest. Were *pain* the only symptom relieved in this manner, however, the argument would be incomplete. But it happens, in some cases of inveterate neuralgia, that inflammatory affections are secondarily produced around the points of greatest pain; and these secondary inflammations are remarkably benefited by the application of blisters in such a situation that they can only act in the reflex manner above indicated. Here, then, is a case in which one can identify the path of the noxious influence, and also the path of the therapeutic influence which successfully opposes it. It appears that the functional condition of the sensory nerve-centre, which corresponds to pain at the *periphery* of the sensory nerve, can extend its influence to the associated

vaso-motor nerve-centres, and finally issue in paralysis of vaso-motor fibres going to the vessels of the painful part. Hence local congestion, hypersecretion, or altered secretion of glands in that neighbourhood, &c. This state of things, it seems, can be remedied by a stimulant influence falling upon the sensory nerve-centre through the channel of centripetal fibres, which have no connection with the inflamed part except through the centre, but yet have a very clear and definite connection with it *by that route.* I cannot but think that we have here most pregnant suggestions towards a reasonable theory of counter-irritation as a remedial agent in inflammatory affections. I have never denied for an instant that the transmission of an influence from the skin to distant organs is possible; but I insist upon two things. First, that unless we can proportion the force of the skin irritation to the vital status of the part to be acted on, we are as likely as not to produce an effect exactly opposite to what we intended; and secondly, that we ought to have some guarantee for the influence being limited in incidence to the affected part at which we aim it. And it seems probable that by reflex stimulation applied to a physiologically distant tract of skin, which is nevertheless in direct communication with the centre on which depend the vaso-motor and also (if, as seems probable, they have an independent existence) the *trophic* nerves of the affected organ, we at once secure the necessary *dilution* of the influence, and an intelligible *path for its transmission* to the diseased part, and to that alone.

7. Dr. Ross limits the beneficial action to the secondary stages of the disease; but it appears to me that whatever good may be produced at this stage through the reinforcement, or (as he would call it) alteration in type, of the tissue-force, may be equally expected in a state of mere inflammatory engorgement by appropriate stimulation of the vaso-motor system of the affected part. And as regards the channel by which the influence is to be conveyed, I have to object to Dr. Ross's theory of the transmission, through continuous and also through contiguous parenchyma, of the stimulant action, and although it is not impossible that a stimulant influence may be thus transmitted independently of the nervous system, it is most improbable that upon the common plan of merely applying irritation to a large surface of skin that happens to be *opposite* the inflamed organ, any precision of effects can be attained. If, for instance, we attack with our blister some five or six inches square of the skin covering the chest of a pneumonic patient, it is impossible for us to be sure that in attempting to produce a beneficial stimulant action on the lung beneath we shall not gratuitously involve six inches square of previously healthy costal pleura in an *inflammation,* which may be by no means trivial in its effect upon the final issue of the case. And it seems to me that this is a serious objection to the theory of Dr. Ross so far as it applies to the use of blisters or other strong irritants to the skin of the chest, or the belly, with a view of influencing inflammatory processes in the lung or bowel. In short, if the influence of blisters *does* "traverse the body in straight lines, like bayonet thrusts," to use Dr. Dickinson's somewhat derisive phrase, it would seem to be an uncommonly dangerous and unmanageable influence: and it is difficult to see how it could be employed with advantage in practice. Whereas, if it travels only by the paths of reflex nervous action, there is no reason to think that (unless applied on an enormous scale) it would exert any vitally depressing effect on organs so anatomically remote, and the only question would be whether it was not purely indifferent; a view to which I on the whole incline in the case of organs so situated as the lung and the bowel are.

I cannot conclude this already too lengthened estimate of the present position of the theory of so-called counter-irritation without suggesting the alterations in nomenclature which seem to me to be nécessitated by our improved physiological and pathological knowledge. I am decidedly of opinion that the word counter-irritation should be altogether banished from our phraseology. "Distant stimulation," or some equivalent phrase, would properly express the effects of blisters, stupes, mustard plasters, and moist heat. The actual cautery probably acts simply by *destroying* a certain quantity of sensitive tissue, and has consequently no real relationship to agents of this class. The only case in which we should retain the phrase irritant, is that in which we deliberately excite or increase inflammation, sacrificing the welfare of a comparatively unimportant tissue or organ to higher vital interests; as, *e. g.*, when we inject an irritant fluid into a serous sac, in order to promote adhesion of its walls.—*Practitioner, March*, 1870, *p.* 156.

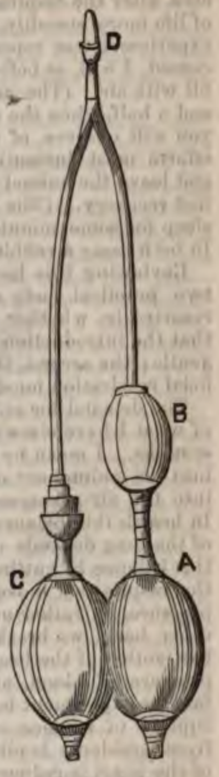
28.—ON ARTIFICIAL RESPIRATION.

By Dr. Benjamin W. Richardson, F. R. S.

The interest taken by the Royal Humane Society to perfect artificial respiration led both directly and indirectly to the invention of easy and ready methods of carrying out the process. John Hunter was an early inventor. He constructed a double-acting pair of bellows, of which I have made a model. These, which we may call Hunter's bellows, act remarkably well; but they are clumsy, and could never be brought into use as instruments to be applied at a brief notice according to the daily wants of the practitioner. The construction is simple enough. A common pair of parlour bellows are divided in the middle of the chamber by a diaphragm of wood, so that, in fact, two distinct chambers are formed, each of which, however, communicates with one common exit tube or pipe. The upper part of one of these chambers has an opening into the air, valved in such a way that when the bellows are opened the air rushes into the chamber and charges it with fresh air. The upper part of the opposite chamber has also an opening into it, but this is so valved that the air can only escape from it when the bellows are being closed. The exit or common tube is, lastly, valved in such a manner that the air from the chamber which fills with common air escapes by it when the bellows are being closed, while it admits air freely into the other chamber when the bellows are being opened.

In using these bellows, the nozzle of the exit tube is placed in the nostril, and the bellows are worked in the ordinary way. Each time the bellows are expanded one of the compartments is filled with atmospheric air, the other with air derived from the cavity of the lungs. Whenever the bellows thus charged are closed, the pure atmospheric air is forced into the lung, and the impure air derived from the lung is driven into the outer atmosphere. In most of my earlier experiments I used these bellows, and with many satisfactory results. A pair of bellows similar to those invented by Hunter were afterwards brought out in France, and were called the "adnoptic bellows." They were, I believe, for a time adopted by the Humane Society. About thirty years ago Mr. Read, the surgical instrument-maker in Regent-circus, Piccadilly, invented a very ingenious apparatus for artificial respiration. In principle this apparatus was similar to the bellows of Hunter, but, instead of ordinary bellows, two brass syringes were employed, from one of which air was driven into the lung, while into the other air was received from the lung, both actions being produced by a single motion of the hand. Mr. Read's apparatus was remarkable for the precision with which it worked, for, the pistons being graduated, absolute measured quantities of air could be introduced into and removed from the lung at pleasure. At a meeting of the Westminster Medical Society, the late Dr. Snow allowed his mouth and nostrils to be closed entirely so that his respiration might be sustained by the pure action of the syringe. The objection to the apparatus was its size; it could not be rendered portable for the common uses of the practitioner.

Owing possibly to the difficulty of making a portable instrument, the adoption of bellows and syringes fell into disuse. They have been supplanted in later times by the method known as the "ready method" of Dr. Marshall Hall and by the more recent method Dr. Sylvester. The systems of these observers are too well known to require description at length. In Dr. Marshall Hall's plan a gentle movement of the body, from the front of the chest to the side, empties and resupplies air. In Dr. Sylvester's plan a movement of *the arms from* and to the side fulfils the same purpose. It is to be admitted at once that by either method sufficient air is introduced into and removed from the lung to represent natural respiration perfectly, while no mechanical injury can readily be inflicted on the lung structure. Further it is to be admitted that, in cases where no other means are at command, they are excellent methods, and one or other should always be resorted to. At the same time they are both open to an objection: they interfere with the movements of the heart. I find by experiment, that is to say, and the point will be better illustrated further on, that when the heart is brought down to a very feeble action, from suspension of the respiratory power, the slightest thoracic pressure is sufficient to arrest action altogether.



A, Feeding bulb.
B, Reserve chamber.
C, Exhausting bulb.
D, Nostril tube.

Recognising this difficulty, I have myself within the last few months constructed successfully a pair of bellows which act as well as the Hunterian model, and which have this advantage, that they can be carried in the pocket, and are, in fact, as portable as need be. The bellows consist, as you will see, of two india-rubber hand bellows, which may be joined together or may be separated according to choice. I usually have them joined. The bellows terminate in one common tube, which we will call the nostril tube, and each bellows contains four cubic inches of air. The bellows are so valved that when, after being compressed together, they are allowed to expand, the one fills with common air, and the other, when the nostril tube is inserted in the nostril, is filled with air from the lung. During compression, after filling, the air in the bellows containing pure air is driven into the lung, while the air in the bellows containing impure air is expelled into the common atmosphere; one bellows is, in fact, exhausting, the other supplying. To the supply bellows is added a small bag or reservoir, very elastic; this prevents undue tension of air upon the lung.

In applying these bellows I proceed in the following way:—I introduce the nostril tube into one nostril, so that it shall fill the nostril completely; then I close the other nostril with a grasp of the finger and thumb, and having carefully closed the mouth, I commence to inflate. If the chest of the subject be small, as, for instance, the chest of a newborn child, I work both bellows at the same time; but if the chest be large—the chest, for instance, of an adult man—I make five consecutive strokes with the bellows which fill the lung, and then three consecutive strokes with the bellows which empty the lung. In this way natural respiration is very carefully imitated; the lung can be filled and emptied ten times in the minute, and no danger of mechanical injury from the action is incurred.

I will now proceed to demonstrate, by one or two experiments, the best and most successful mode of applying artificial respiration. For this purpose we will subject an animal to the action of methylic ether gas, will allow it to go to sleep, and then to inhale the gas until all respiration has ceased. We will also so time the inhalation that the cessation of respiration shall occur within four minutes from the commencement of the inhalation. (The experiment was performed.) The animal has now ceased to breathe. I take then the pocket bellows and introduce the nostril tube into one nostril; next seizing the side of the bellows which empties the lung, I make one or two strokes so as to empty the lungs of their contained air, and this done, I grasp both bellows and commence to fill and empty the lung very gently, watching the effect produced upon the chest. (The process was continued for three minutes.) In this case I have no response, and my experience tells me that

I shall have none. I have either by a little haste inflicted some mechanical injury on the structure of the lung, or I waited too long before I commenced the artificial respiration, so that the right side of the heart had time to become arrested. We will therefore repeat the observation on another animal, taking care, after the respiration has ceased, to begin our efforts towards restoration of life more speedily, and be more carefully delicate in manipulation. (The experiment was repeated as proposed.) Now the respiration having again ceased, I will, as before, first empty the lung, and then alternately empty and fill with air. (The artificial respiration was continued for about a minute and a half, when the animal recommenced to breathe naturally. The animal, you will observe, of its own volition, has made an inspiration, and now my efforts must instantly be brought to a close. I withdraw the nostril tube, and leave the animal to its fate; the result in nearly every case will be perfect recovery. (The animal in this experiment continued to breathe as in sleep for some minutes, and before the close of the lecture had recovered. In both cases a rabbit was the subject of observation.)

Reviewing this last experiment, let me particularly call your attention to two practical facts applicable to all cases where the artificial method is resorted to, whether the subject be a man or a lower animal. The fact is, that the introduction of air, after the emptying of the chest, cannot be too gentle; the second, that so soon as the natural respiration is set up, the artificial respiration must be allowed to cease.

The demand for attention to these two details is based on the consideration of what I have elsewhere called the balance of the respiratory and circulatory systems. I mean by this the balance of pressure between the blood impelled into the pulmonary circuit by the right side of the heart and the air drawn into the air-passages of the lung by the action of the inspiratory muscles. In health this balance is perfect, and the integrity of the vascular structure of the lung depends upon the continuance of this perfection. If we break this balance by cutting off the supply of blood through the pulmonary artery, the respiratory movements remaining in full power, the result is undue pressure, or rather unresisted pressure, of air and emphysema. If, on the other hand, we break the balance by cutting off suddenly the supply of air, the motion of the heart continuing the same, the lung is left to the unresisted pressure of blood, and the result is congestion of lung. When Hooke's famous experiment is under observation both these conditions of lung from rupture of balance can be demonstrated perfectly to the eye. When, then, from accidents leading to arrest or suspension of the respiration, the power of the heart is reduced to the lowest, when the organ all but ceases to beat, it is necessary to restore the respiration, with so much gentleness that the two systems shall be restored. Press air forcibly into the lung at this moment, and rupture of the vascular structure is a necessary consequence. The point of practice, in brief, is simply to fan the little remaining current of blood which is making its way over the pulmonary surface for aeration, and so soon as ever the muscles of the animal take on the merest action, so as to continue the process, to let them do the work without any artificial aid; they will assuredly be equal in power to the embarrassed heart, and the two powers will soon be working upwards and in harmony.

The whole meaning of artificial respiration, the whole value of it, may be truly and yet simply illustrated by the experiment of putting out and relighting a lamp. I take here the microscope lamp, known usually as the Queen's reading lamp; I place a damper on the chimney when the light declines; I wait some seconds and then, removing the damper, drive a little air through the chimney—and see, the flame revives. I repeat the process of nearly extinguishing the flame, and once more I give air; but this time I give the air more determinately, and the result is utter failure, so that now I have put out the lamp altogether. Childish as this experiment may be, it is one which should never be forgotten when artificial respiration is under practice; the remembrance of it tends to subdue the desire to effect more than is required.—*Medical Times and Gazette*, *Dec.* 4, 1869, *p.* 649.

29.—ON THE ESTABLISHMENT OF ARTIFICAL RESPIRATION BY MEANS OF ELECTRICITY.

By the Editor of the LANCET.

[Electricity to be of use in establishing artificial respiration must be obtained from the right sources and applied in the right way. The rotatory electro-magnetic machines are not suited either for this or for any other medical purpose. They are very uncertain in their effects.]

For all medical uses, the inducing current should be quite uniform; and, for the purposes of resuscitation, the machine must be ready at a moment's notice. These two conditions are best fulfilled by the batteries made by Dr. Emil Stöhrer, of Dresden, and commonly called after his name. Their force is derived from zinc and carbon elements, by the action of chromic and sulphuric acids, and the glass vessel containing sulphuric acid can be so lowered down that the elements are no longer immersed, and all action ceases. When this vessel is raised, action immediately recommences; and hence the battery is always in order, always ready for work, and only requires to be freshly charged at long intervals of time. The whole is enclosed in a locked box, which may be inclined to an angle of sixty degrees with the horizon without risk of spilling its contents; and if this inclination be exceeded, or if the box be upset, the acid runs out through a hole left for its escape, and does no damage to the coil. As usually sold, the box contains rheophores or conductors that are well adapted for the localised electrisation of muscle, but not for producing artificial respiration. To effect this in the best way, it is necessary to direct the current upon one of the phrenic nerves, where it crosses the scalenus muscle. The deep penetration of electricity requires that the rheophores should be thoroughly wetted, and that moderately firm pressure should be used. Moreover, in order to make sure of the phrenic nerve in an emergency, the rheophore should have a surface sufficiently large to cover the whole width of the region that it traverses. These conditions are best fulfilled by a rod of brass, furnished at one end with an insulating handle, and at the other with a flattened brass knob of perhaps an inch in diameter. The knob should be covered with a layer of fine sponge, sufficiently thick to absorb moisture freely. To complete the circuit any common rheophore may be employed, furnished with sponge in the ordinary way; and both sponges should be well moistened with salt water, or with water alone if time presses. When it is desired to commence artificial respiration, the special rheophore should be connected with the positive pole of the induced circuit. The other, connected with the negative pole, should be placed lightly upon the sternal region, and then the special rheophore should be applied, with steady pressure (so directed as not to compress the trachea), upon the margin of the sterno-mastoid muscle where it crosses the scalenus. The sterno-mastoid should be relaxed by position of the head; and the passage of a moderate current will usually produce energetic contraction of the diaphragm. As soon as this takes place the cervical rheophore should be raised, to allow the muscle to relax by the withdrawal of the current. It may be reapplied after a few seconds, possibly to the phrenic nerve of the other side; and should be so used as to produce and maintain the closest possible imitation of natural breathing. When, on the removal of the rheophore, natural breathing takes place, the patient may be pronounced safe, and may be turned on to his left side for nature to complete the process of recovery.

For this method of applying electricity to produce artificial respiration, we are indebted to Professor Ziemssen, of Greifswald, who has recorded some highly instructive cases of restoration from apparent death by its means; not only in chloroform cases, but in suspended animation from drowning, from the inhalation of noxious gases, and other causes. We have dwelt at some length upon the details of its employment, because there is a sad lack of clear knowledge about the matter. The evidence given before the Coroner in some cases of so-called "accidental" death from chloroform has shown that what was called "galvanism" was either not employed at all, or was employed in such a way that it could not possibly be productive of benefit. We have even heard of one case in which the galvanic operator percussed the chest with the two rheophores alternately, never having both in contact with the body at once, and, therefore, never passing any current at all. We have heard of another in which one of the conductors used was a dry brush of metallic wire, the current from which would affect the skin only; and, being quite powerless to excite respiration, would be only comparable to that "flipping with a towel" which we have already condemned. In any case of suspended animation or apparent death from chloroform, if electricity is used at all, it should be used in a certain definite way, and to produce a certain definite effect—that is, the contraction of the diaphragm.

In experiments upon small animals the use of electricity has not been attended by favourable results, and has been found to paralyse the heart, probably by exhaustion of its muscular energy. There are theoretical reasons why this should happen, and there are also reasons for believing that the diaphragmatic respiration produced is too forcible to be that which is best adapted to promote recovery. Against such experiments and such reasoning we have the probability that, in both these respects, the balance of human functions is less easily disturbed than in the case of rabbits and puppies; and we have also the fact (of which Ziemssen's history of the case of Otto Krause affords the most notable example) that a child has been recovered from apparent death after three minutes' total cessation of breathing, by such faradisation of the phrenic nerves as we have described. Examples of the same kind, and of almost equal interest, have also been recorded by other competent observers.—*Lancet, Jan.* 22, 1870, *p.* 125.

DISEASES OF THE ORGANS OF DIGESTION.

30.—THE THERAPEUTICS OF CHRONIC CONSTIPATION.

By Dr. John Kent Spender, Surgeon to the Mineral Water Hospital and to the Eastern Dispensary, Bath.

[The usual professional treatment of chronic constipation of the bowels is very unsatisfactory. It removes the difficulty of to-day without lessening that of to-morrow.]

The plan which I now propose does bestow some care on the future, and professes to be, so far, curative in its operation. It comprises four therapeutic factors: (*a*) minute and frequent doses of watery extract of aloes, very rarely of extract of colocynth; (*b*) a dose of sulphate of iron (gr. jss. or ij.) always combined with each dose of the direct aperient; (*c*) regulation of the diet; (*d*) constitutional exercise. I have to write chiefly of factors (*a*) and (*b*). The quantity of extract of aloes, in all but extraordinary cases, should not exceed one grain. It is conveniently given in the form of a pill. With this pill there should always be mixed a dose of sulphate of iron varying from one to three grains; this is the essential point of the treatment. Any other tonic of the neuratic kind cannot supply the place of the iron; for the purpose I am now relating, iron is not only *facilè princeps*, but it is not interchangeable by anything else. Extract of nux vomica may be added, if the prescriber pleases, as an ornamental appendage or as a means of blending the other constituents together; and belladonna is a remedy of definite auxiliary power, but both these drugs, *quoad* constipation of the bowels, are uncertain or unsatisfactory, and rarely do permanent good. I begin, then, by desiring an adult patient to take a pill composed as above three times a day, immediately after the principal meals. He is cautioned that at first there will be probably no apparent effect, and that two or even three days may pass before any medicinal evacuation of the bowels takes place, perhaps even then difficult and discomforting. But within the next forty-eight hours there will be most likely an evacuation of the bowels once or possibly twice in the day; *but nothing approaching purgation ought ever to be permitted*, and therefore the patient must be instructed, on the occurrence of the first loose motion, to withhold a pill, and to take only one in the morning and one in the evening. He then continues for a time his morning and evening pill, and is pleased to discover that so slender a medicament has such a decided effect. Not improbably, at the end of another week or fortnight, he is compelled by the same reason as before to drop another pill, and the same result is now brought about by one pill daily, as was originally produced by three pills. Within another month, he may reduce his allowance of medicine to a single pill once or twice a week; and, finally, his whole scheme of medical treatment becomes merely preventive in its design and scope, and he takes a pill occasionally for the sake of maintaining health and warding off old troubles.

When there is a real or fanciful difficulty in the administration of pills, the best way of carrying out the plan above described is by combining the *mistura ferri composita* with the *decoctum alöes compositum*, the doses being determined by an application of the same principles. There is wider room for the addition of auxiliary drugs, but, on the whole, I have not obtained such satisfactory results by this method.

I cannot lay too much stress on avoiding anything like an over-purgative effect by the drugs employed. If on this account the treatment has on any occasion to be stopped, there is so much time lost and so much ground to be retraced. A patient may, unintentionally, exaggerate his difficulties, but the skilful practitioner will not therefore depart from the fundamental principle of minute and frequent doses of his medicine. In this way Nature is coaxed and assisted, instead of being forced and worried; and I declare without hesitation that only by this means can a sure and permanent benefit be realised.

The urgency of regulating the quantity and quality of the food is so obvious, that I need add nothing to what has been so well laid down by systematic writers. The necessity of constitutional exercise—a definite amount every day—is equally clear, and its physiology requires no illustration here. The serious and ingravescent forms of constipation which are secondary to stricture (cancerous or fibrous) may be temporarily relieved by the plan I have sketched; but ultimately the obstruction will defy all ordinary remedies, and our suspicions should be aroused to the possibility of organic disease, whenever a retrograde step occurs again and again after apparent success has been attained.

I append outlines of a few cases:—

Case 1, 1863.—The widow of a clergyman, aged 72, had taken for twelve years a strong dose of drastic medicine once a week, without which she alleged that the bowels would scarcely ever be moved at all, or only with extreme difficulty. She was confined to her bed, or to her room, by some obscure injury of the hip-joint. She took three iron and aloes pills daily, with an almost immediately good result; and, at the end of three months, she was able to relinquish medicine almost entirely. Until her death, in the autumn of 1865, she had an action of the bowels nearly every day, without any aid from the pills, or perhaps a pill once a month.

Case 2, 1867.—A young man, aged 21, assistant in a bookseller's shop, suffered from extreme constipation. His habit was to have an action of the bowels only once a week, or thereabouts. The pills were taken four times a day for two or three months with scarcely any result. Suddenly everything came right, but he continued the pills in diminishing numbers for nearly a year to prevent relapse. At present he rarely takes any, and enjoys good health.

Case 3, 1868.—A clergyman, aged 43, had suffered for some years from constipation, which, however, was qualified by the fact that mild aperient medicine easily caused diarrhœal purging; and this, again, was succeeded by constipation worse than before. Here I lost ground in my treatment, at first, by prescribing overdoses of the extract of aloes: but a quarter of a grain with the sulphate of iron three times a day answered precisely, and he is now reducing his medicine month by month.

Case 4, 1864.—The daughter of a tradesman, aged 18, had suffered from early childhood. Previous medical advice had sanctioned the routine treatment of a very powerful dose, once a week, of senna, aloes, and sulphate of magnesia, and this had been continued for several years. In less than three months my plan had succeeded so well (assisted, of course, by appropriate diet and systematic daily exercise) that no medicine was required for some time. She now (1869) takes a precautionary pill every three or four weeks.

Case 5, 1867.—A poor woman, aged 37, consulted me at the Eastern Dispensary, Bath. Symptoms very aggravated and painful. Here aloes entirely failed, and so I gave, three times a day, two grains of compound colocynth pill with two grains of sulphate of iron. Complete success in four months, so that no medicine of any sort was needed.

Case 6, 1868.—The wife of a military officer had been compelled for several months to take every day (or nearly every day) three grains of compound colocynth pill, in order to obtain a satisfactory evacuation of the bowels. I persuaded her to adopt my plan, and I found that she required only a quarter of a grain of aloes with the iron in each pill. She now takes only one pill daily (the treatment was begun ten weeks ago) with an excellent effect, and the health is much improved.

I remember one case in which only $\frac{1}{12}$ of a grain of the extract of aloes was taken from the very beginning. In every instance I have quoted the amelioration of the general health was remarkable, due partly to the hæmatinic properties of the iron, and partly to the removal of the incessant dread and worry of being obliged to take painful and potent medicines. A haggard nervous face becomes bright, and a weary step becomes elastic and quick. I have often combined cod-liver oil with the pills, and the result has been usually good. The amenorrhœa which is sometimes associated with constipation in women is curable *pari passu* by the same means; and, if pregnancy exists, the prospects of parturition are made more encouraging if the treatment be carried out with suitable watchfulness.—*Medical Times and Gazette, Feb.* 19, 1870, *p.* 201.

31.—OBSERVATIONS ON SWALLOWING INDIGESTIBLE SUBSTANCES; WITH THE PARTICULARS OF AN INSTANCE IN WHICH A GOLD PENCIL-CASE PASSED INNOCUOUSLY THROUGH THE GULLET, STOMACH, AND INTESTINES.

By Sir WM. FERGUSSON, Bart., Sergeant-Surgeon to the Queen.

Cases are familiarly known, both in domestic annals and among the profession, of indigestible substances having been swallowed and subsequently evacuated from the rectum, without having produced any inconvenience whatever. These have usually been rounded or smooth-edged, such as bullets or coins, and occasionally sharp-pointed or sharp-edged objects, such as gold plates with false teeth, or pins for holding them, or with sharp hooked extremities to grasp neighbouring sound teeth. Even blades of knives have passed innocuously through the tortuous route of the alimentary canal. It is often a marvel to the anatomist and physiologist how these have not caught in some of the narrow corners or fringes of mucous membrane. It seems to me more remarkable than that they should catch or be held permanently in some part of such a devious route. Instances are well known of plates, with and without false teeth, and other foreign objects lodging for a time in the gullet or pharynx, some of which have passed downwards, some have been ejected by vomiting, or been hooked up by the surgeon, whilst some have remained in their unnatural position for years. I know of a case of this kind, where false teeth and gold plate have remained in the lower part of the gullet for years. A collection of such cases would add an interesting chapter to "The Curiosities of Surgery." Although fatal effects are often produced by foreign objects in the gullet—by suffocation, ulceration, and opening of the aorta—experience has proved that the greatest danger is in the stomach and intestines. It is wonderful with what facility a passage has been permitted to the stomach; but after this the "difficulties" have begun. In the museum of the Royal College of Surgeons many remarkable illustrations of the kind are preserved. In particular there is one preparation showing an ordinary dessert-spoon sticking in the ileum and cæcum, which had been swallowed, but had stuck fast there, and caused death by ulceration; and another, a dessert-knife eleven inches long, which, being arrested in the stomach, had ultimately caused a fatal termination. There are also specimens of blades and handles, or eroded portions of pocket knives, which had been passed per anum. Mr. George Pollock published in the first volume of the *Lancet* for 1869 an interesting paper on "Cases in which Artificial Teeth were Dislodged and Swallowed, or Impacted in the Pharynx;" and in the same volume Dr. Bond has recorded an instance where a large buckle for braces was finally, after some weeks' residence in the gullet, pushed down into the stomach, where it caused no inconvenience. Within these two years I have myself seen an instance of the safe passage of four false front upper teeth, with gold settings, in three days, through the stomach and intestinal tube.

Perhaps the most remarkable case ever known of swallowing indigestible materials is that recorded by Dr. Marcet, of Guy's Hospital, in the twelfth volume of the Medico-Chirurgical Transactions (1823). John C., a sailor, twenty-three years of age, in the course of ten years from that date, swallowed at different times at least thirty-five knives. Some of these, or eroded portions, were occasionally vomited or passed per anum. He finally died of exhaustion, after much suffering; and, on opening his body, forty different pieces of blades and handles were found in the abdomen. These were chiefly in the stomach, but some had reached as far as the rectum. One portion of metal—a back spring, measuring 4¼ in. long—had become impacted in the descending colon, and one end, being sharp-pointed, had perforated the coats, so as to project into the peritoneum. Another portion was found in the rectum, with one end projecting through, so as to be held fast in the pelvis. It is wonderful how far these portions had proceeded along the intestinal canal. The separation of the knives into their component parts, the erosion of the metallic portions, and the disappearance of the horn of the handles, all evince the influence of the fluids on these different materials. It might be a question where such effects were chiefly produced; and doubtless, the gastric juice would be considered as playing the principal part. If sheer exhaustion had not finally carried this person off, might not all these remaining portions have disappeared in time? Notwithstanding our admiration of hartshorn and of iron, it seems certain that, when thus taken into the body, life is greatly jeopardised; and that in such doses, the sooner evacuation takes place the better for the patient.

But is it reasonable to expect that such large objects will pass through the tortuous course from mouth to anus? The anatomist and physiologist would be inclined to think such a thing impossible, but experience has proved that it is realised occasionally. Instances referred to at the beginning of this paper are examples of the fact; and in the museum of the College of Surgeons a number of portions of metal, knife-backs, &c., have been preserved as having been evacuated by a soldier who, like his compatriot the sailor, had indulged a fancy for swallowing clasp knives. Even the long portions in the descending colon of C. had been arrested by a kind of accident, we may suppose, for, as the anatomist knows, it had passed all the places where it was most likely to have stuck fast—the pylorus, the duodenum, the numerous folds of the small intestines, the valvulæ conniventes—even the ileo-cæcal valve! Yet it stuck fast in a wide part of the larger intestines.

To show that hope may be entertained in some such cases I venture to put the following case on record as the most remarkable that has ever come under my personal observation. A gentleman about fifty years of age, tall and stout in frame, had tried on several occasions to destroy himself, but had been thwarted in his intentions by the vigilance of his attendants. His habits were occasionally very intemperate, and recently, during such condition, he had tried to throw himself out of window, to set fire to his night-dress, and to stab himself in the abdomen with a breakfast knife. He had inflicted seventeen wounds in the skin near the umbilicus, but none of them penetrated much beyond the surface. An attendant was in the room with him day and night, and all edged instruments were carefully kept away.

Early on the morning of January 2nd, 1870, he seemed as if choking, with his head under the bedclothes; but speedily recovered, and when asked what was the matter, he said it was only a cough, and soon became quiet. His attendant feared that he must have swallowed something, but he denied any such act, and nothing more was said on the subject at the time. Among the articles in his bedroom a gold pencil-case was missed. A careful search was made, but he seemed indifferent as to the result, and expressed his conviction that it was not lost. On the day in question, and the following, he was feverish and occasionally vomited; he could not swallow solids, but partook readily of fluids. On the third day he took food as usual, and made no special complaint. There were ample grounds for suspicion that the pencil-case had been swallowed. The patient was silent on the subject, and as no good appeared likely to arise from urging a confession, nothing was said to him about it. He was encouraged to eat solid food, and the attendants were enjoined to watch the alvine evacuations. As I had to dress the wounds on the abdomen, I had ample opportunity of manipulating so as to detect any tender spot within. He occasionally complained of pains, but these seemed to me more imaginary than real.

On January 19th he confessed that he had swallowed the pencil-case, and then I explained what might possibly ensue. In particular, I said that it might find its way to the rectum, and produce irritation there. The following morning he fancied that it was in that locality. I examined and introduced a lithotomy forceps, but nothing could be felt.

On the morning of the 24th, whilst on the stool, he felt that something unusual had passed, and the case was found in the evacuations. Twenty-two days had elapsed since it had been swallowed, and with the exception of the annoyances of the first twenty-four hours, when it doubtless had been in the gullet, I doubt if there had been a twinge of pain dependent on its progress downwards. It might have been interesting in a surgical point of view to have extracted it from the rectum; but the story is more valuable as showing what nature may do under similar circumstances. There has been no irritation nor complaint of any kind in the gullet, stomach, or bowels since.—*Lancet, March* 12, 1870, *p.* 368.

32.—CHLOROFORM IN THE TREATMENT OF BILIARY CALCULI.

By Dr. John Barclay, Physician to the Infirmary, Leicester.

Seeing some reference in a contemporary periodical, to the proposed use of chloral as a solvent of biliary calculi, I crave space to state that I have met with very great success from the internal administration of chloroform in that disease.

I first used it in 1861, in the case of a clergyman, aged 58. He had suffered for twenty-three years from gall-stones; the peculiar pain, jaundice, with subsequent discharge, by stool, of the calculi, coming on so suddenly and without warning, as seriously and frequently to interfere with his duties. Just then, writing on alcohol, I had been studying the experiments of Lallemand and others, on the existence of alcohol unchanged in the blood. Knowing that ethers are solvents of cholesterine, I ventured, on his third attack in that year, to prescribe chloroform in doses of two or three drops, three or four times a day, on the chance of its reaching the calculi through the blood. To his surprise, and my gratification, pain, tenderness, distension and jaundice disappeared together, and in the eight years since elapsed, he has never had another attack. He keeps a bottle of "chloric ether" by him, for occasional use. I have found it to give invariable and permanent relief in many instances since.

The theory of thus dissolving the calculi *in situ*, followed by the disappearance of the symptoms, leads to a deduction that may be legitimate, that relief was obtained by their being so dissolved—*British Medical Journal, Jan.* 15, 1870, *p.* 51.

DISEASES OF THE URINARY ORGANS.

33.—ON A PURELY MILK DIET IN THE TREATMENT OF DIABETES MELLITUS.

By Dr. Arthur Scott Donkin, Lecturer on Forensic Medicine to the University of Durham, and Physician to the Sunderland Infirmary and Dispensary.

In a previous contribution I gave a full detail of two cases of diabetes mellitus treated by an exclusively skim-milk diet, with the subsequent addition of animal food and green vegetables for dinner, after convalescence had been for some time established. In one of these cases—the boy, T. H., aged seventeen—the treatment was successful, and a cure rapidly resulted, inasmuch as the sugar was completely removed from the urine, while the patient's health and strength were perfectly restored. The other case—that of W. H., the seaman, aged thirty-one—was not so successful, a small quantity of sugar remaining permanently in the urine, although the general health was perfectly re-established. But this less favourable result was attributed to two causes; first, to the long continuance of the disease (nineteen months after its full development) before the treatment was begun; and, secondly, to the fact that the patient frequently partook, clandestinely, of prohibited articles of food, especially bread, as I afterwards discovered. If the treatment had been commenced when the disease was first recognised, and the patient had been educated, intelligent, tractable and capable of appreciating the necessity for a dietetic course of treatment, and above all, if he had been in a good position in life, instead of returning home to abject poverty, I feel assured the result would have been even more favourable, and probably completely successful.

Dr. Francis Home first indicated the value of an animal diet in the treatment of diabetes mellitus, and it is now nearly three-quarters of a century since the diet he indicated was reduced to a system by Dr. Rollo, in the important work he published on the subject. During the period which has since elapsed a diet more or less purely animal, as indicated by him, has been recognised as the proper and only available treatment to be employed against this most formidable malady. But the treatment of Rollo, either absolutely followed out or modified by the admission of certain kinds of vegetable food, is not by any means so universally successful as could be wished. The life of the patient is sometimes cut short during the treatment by the sudden accession of inflammatory affections of the abdominal and thoracic viscera. Dr. Bardsley specially directed attention to this fact. Besides, it is exceedingly difficult to enforce a strict adherence to animal food for any length of time; with some individuals, indeed, it becomes almost intolerable. Dr. Rollo himself even lamented that this mode of treatment should be so repulsive to the patient. A purely milk diet, however, is free from these objections; milk being generally relished by the patients, especially at the outset of the treatment, when the thirst is intense. Afterwards they never tire of it, although they generally express a desire for solid food in addition.

From the experience I have already had, I have not the slightest hesitation in asserting that the milk treatment of diabetes is as superior to Rollo's, with its more modern modifications, as Rollo's was to any method previously in use. But it is necessary to add that *it must be persevered in methodically and exclusively until convalescence is established.* If this rule is not followed from the beginning the result will not be successful.

The efficacy of this treatment need excite no surprise when we know that the disease has hitherto been amenable only to the protracted employment of a dietetic course. The *rapidity* with which milk acts is truly surprising, twenty-four hours being sufficient for the production of a marked improvement: the quantity and density of the urine suddenly fall, and, *pari passu* with this change, the thirst and voracious appetite disappear, the skin becomes moist and perspiring, while the symptoms referable to the nervous system are as rapidly relieved; profound refreshing sleep succeeds to the previously sleepless, restless condition, rendered almost intolerable by the incessant thirst.

The patient expresses himself thankful for the sudden and unexpected change. In the two cases I have recorded, this sudden relief was obtained. I may mention, too, that a third case is now under my care, in which, by the same milk diet, and *without any other remedy whatever*, the urine fell from 23 pints, sp. gr. 1038, to 9 pints, sp. gr. 1040, in twenty-four hours, and to 6 pints, sp. gr. 1038, at the end of the third day of treatment; in other words there was *a diminution of* 14 *pints of urine and about* 19 *oz. of sugar in twenty-four hours, and of* 17 *pints and about* 24 *oz. of sugar in three days.* A result like this seems almost incredible; but I may add that this astonishingly rapid improvement in the urine was accompanied by a correspondingly rapid abatement of the other prominent symptoms of the disease. I shall, however, give a complete history of this case in a subsequent communication. I have no doubt that others will, on trial, find the remedy to act with the same magical rapidity as I have done.

But that milk should exercise a more powerful influence over diabetes than even a purely animal diet can, I think, be explained by the fact that the caseine of milk, being a primitive albumen, is infinitely superior, as an agent of nutrition, to the albumen of muscle, which has been highly and specially organized to perform an important and vital function. Besides, the sugar which milk contains is quite innocuous in the disease (as shown by my experiments), and it supplies the system with a saccharine proximate, alimentary principle equivalent to such as is afforded by vegetable food. There can be no doubt that the sugar of milk is destined to supply for the nutrition of the young an equivalent for the amylaceous and saccharine principles entering so largely into the food of the adult.

It is erroneous to suppose that a moderate quantity of sugar is injurious in diabetes. Sugar cannot be again converted into sugar by any morbid process in operation in the liver or elsewhere, and cannot therefore supply a pabulum for the activity of the morbid process by which diabetic sugar is elaborated. Starch seems to be the fuel requisite to maintain the morbid action of the disease in all but the most advanced cases, and it would appear that this substance, and every species of food containing it, should be prohibited, even in complete recoveries, for a long period, after health has been re-established, and sugar long absent from the urine. The necessity of this precaution was shown in the case of the youth, T. H., who, before he left the infirmary, clandestinely partook of large quantities of bread, the result being that some sugar reappeared in the urine; but in three days this again totally disappeared, after bread had been strictly prohibited. In some individuals the tendency to the formation of sugar, from the malassimilation of amylaceous substances, may possibly be so great as to become an idiosyncrasy. But what length of time must elapse before permanent security is reached can only be ascertained by direct experiment; doubtless it will be found to vary much in individual cases. The success of the milk treatment of diabetes shows that in this disease it is by no means necessary to limit the quantity of fluid taken by the patient, as has been supposed by some authorities. The thirst bears a definite relation to the quantity of saccharine urine voided, and rapidly subsides when the latter has been reduced to a nearly normal condition.

These observations will, I trust, stimulate others to investigate the subject for themselves. I shall only add that in all probability milk will be found, from the nature of the organic compounds it contains, to be the most potent remedy we shall ever become acquainted with in the treatment of diabetes mellitus.—*Lancet, Nov.* 27, 1869, *p.* 735.

34.—ON THE TREATMENT OF DIABETES BY MILK, &c.

By Dr. George W. Balfour, Physician to the Royal Infirmary, Edinburgh.

A diet restricted to milk alone, and a diet composed partly of milk, are very different things in regard to the cure of disease; and many ailments which will yield to the one are wholly uninfluenced by the other. Milk, as a curative article of diet, has been very highly extolled from the earliest times; but, in recent days, it has found its most enthusiastic exponent in Dr. Karell, of St. Petersburg, whose original paper in the *Edinburgh Medical Journal*, for August, 1866, p. 97, I commend to your attention. There you will find the whole history of this mode of cure, and several very remarkable cases by Dr. Karell himself, selected from a total experience of 200 cases. I need not stop now to inquire how the milk acts, because beyond that it acts as a peculiar system of diet which means nothing, we know nothing; it is something more to the purpose that it is a diet procurable by the poorest, and one which can be readily taken and persevered in by all ranks and classes for months or years. The great Professor Black adopted it for many years before his death, because he thought it ought to be the natural food of an aged man commencing his second childhood: he died with a bowl of milk in his hand, and so quietly, that he did not spill a drop of it. I have known it successful in curing a very severe asthma, which had for years resisted every kind of treatment with the greatest obstinacy, and several very obstinate cases of general ill health; of late it has been brought before the profession by Dr. Donkin, of Durham, as a cure for diabetes mellitus, for Bright's disease, and for other forms of imperfect and deficient nutrition. In our own case, we had every reason to be satisfied with the results obtained. The patient was a woman named F., admitted 14th December, five months ill, and considerably emaciated. Her age was 51—so far favourable, because the older, within certain limits, the more amenable patients usually are to treatment. On her admission she passed ℥ 240 of urine, sp. gr. 1043, and drank ℥ 100; she was kept under observation for five days, being placed on full diet; her urine, during this period, varied from ℥ 240 to ℥ 174, sp. gr. always above 1040, the amount drunk varying from 5 to 6 pints. On the 20th of December she passed only ℥ 174, but on the 18th she had done the same; while on the 19th it again rose to ℥ 240. Obviously, therefore, there had been on the full diet alone no steady improvement, and no guarantee, nor from past experience any likelihood, that it would remain at that low figure. On the 21st, she was placed upon 6 pints of skim-milk for her sole diet, no other article of food to be taken; that day her urine fell to ℥ 120. She required no extra drink. On the 22nd, she passed only ℥ 110, and the amount continued to fall till the 26th, when it was only ℥ 90, but still remained at the sp. gr. of 1040. She was dismissed on the 30th ult. at her own request, in consequence of domestic affliction. Up to her dismissal her urine continued steadily at ℥ 90, but fell in sp. gr. so low as 1033 the day before she left. Obviously this woman was not cured, but she had certainly made a very remarkable improvement during the short time she was under treatment; and had she remained longer with us, I have no doubt that she would have been cured. As it is, her treatment, involving only a diet at once simple, easily procurable, and inexpensive, can be readily carried out at home, and I daresay she may there succeed in perfecting her cure. This treatment does not exclude the employment of opium, of iron, or quinine, or any other remedies otherwise considered appropriate to such cases; indeed they may be very properly conjoined—in our patient they were not given, because not required. From two to three months is the period usually stated as sufficient to cause the complete disappearance of sugar from the urine; and then the diet may, if desired, be rendered more solid, by the detraction of some of the milk, and the addition of butcher's meat and green vegetables. It is doubtful, however, whether diabetic patients, even though apparently cured, can ever return to ordinary diet. Present experience of such cases is too limited to afford any data at all in regard to this. When the milk diet is employed in the cure of other forms of ill health, it is often conjoined after the first few days with a small amount of solid food; and what such patients relish most is plain bread with salt, or a salt herring, the mawkish sweet taste of milk inclining them this way. In diabetes, the thirst present usually makes it better to give the patient his full allowance of milk, and let him divide it over the day as he pleases. For other classes of disease the amount of milk must be at first restricted to two or three pints in the day, to be taken in divided portions at regular intervals.

Except in the case of ulceration of the stomach, in which, from the great irritability and tendency to vomit, as well as the absolute necessity of keeping the stomach empty, and passing the fluid food through it to be digested in the intestines, it is absolutely necessary to give the milk in such small doses as ℥ ss. every half hour; or, in serious cases, where there has been much hemorrhage, or where great irritability is present, even only once every hour; and such cases—kept, of course, in the recumbent position—will not only live, but actually thrive on this meagre diet.—*Edinburgh Medical Journal, Feb.*, 1870, *p.* 709.

35.—ON THE INFLUENCE OF CODEINE IN CONTROLLING THE ELIMINATION OF SUGAR IN DIABETES.

By Dr. F. W. Pavy, F. R. S., Physician to Guy's Hospital.

[Dr. Pavy relates a number of cases of diabetes treated by the administration of opium, morphia, codeine, narcotine, and narceine. These cases are given in the fullest possible manner, the quantity of urine per day, its sp. gr., the quantity of sugar in each fluid ounce of urine, and the quantity in the twenty-four hours' urine, are all given, for every day under treatment, along with the form of opiate given, and the dose. These cases occupy forty-six pages of the Guy's Hospital Reports. They afford most direct evidence of the possession of a powerful controlling influence by certain of the agents used over the elimination of sugar in diabetes. Dr. Pavy says:]

I may state that I have never hitherto been able to accomplish by medical treatment in diabetes, the same or anything like the same that I have been accomplishing lately. Of the agents as yet tried, opium, morphia, and codeine are those which may be spoken of as evidently enjoying the power mentioned. In two of the cases belonging to this communication I gave narcotine to the extent of five grains three times daily without observing any visible effect. Narceine I have only tried once, and then it did not seem to exert the slightest action. Moreover, narceine is a very insoluble principle, and doubts may be entertained if much of what is administered gets absorbed into the system.

Of opium, morphia, and codeine, the last, I consider, possesses the most advantageous properties. As far as my experience, including that amongst hospital in-patients and out-patients and in private practice, enables me to judge, I cannot help thinking that codeine will be found to prove a valuable agent in the treatment of diabetes. In some cases it appears to possess the power of exerting a direct curative action. In others, however, although it has been found, particularly for a while, to control the elimination of sugar and improve the general condition, yet it must unhappily be said that it has afterwards proved powerless in averting an unfavourable termination.

The great advantage of codeine over opium and morphia is that it is equally efficacious in controlling the disease, and does not exert the same narcotic effect. When given in a small dose to begin with, and increased gradually, nothing may be perceived beyond its effect upon the disease. Half a grain I consider an appropriate dose to begin with, and, as seen by the following cases, I have given it to the extent of ten grains three times daily. Beginning with one grain three times a day, a little drowsiness, giddiness, and perhaps headache, may be complained of. I have begun with two grains three times a day; but the dose had to be reduced to one grain on account of the disturbance of the cerebral functions that was produced. Under its employment I have not observed the pupils to become contracted, nor have I noticed any marked constipating action. It may, perhaps, have a little tendency this way, but nothing certainly to any marked extent. The tongue, in some of the cases, I have particularly noticed to be conspicuously clean and moist. The appetite, as a rule, has not been affected by it.

In all the cases the agents were administered in the form of pill. I think it desirable, for the sake of precision, to mention that it was from Mr. Morson, of Southampton Row, that the codeine, narcotine, and narceine employed were obtained.

I consider that the only way of obtaining precise information about the action of an agent administered in diabetes is through a daily analytical examination of the urine. The patients in the hospital under my charge, whose cases are forming the subject of observation, are directed to preserve all the urine passed from a certain hour one day up to the same hour the next. After all has been mixed together and the quantity ascertained, a specimen is taken to my physiological laboratory for examination. Here the sp. gr. is noted, and a quantitative determination of the sugar effected. Thus it was that the several results mentioned in the cases were obtained.—*Guy's Hospital Reports, Vol.* xv., 1870, *p.* 420.

36.—ON THE VARIATIONS IN THE ACIDITY OF THE URINE THAT OCCUR WHEN VEGETABLE AND MINERAL ACIDS ARE USED.

By Dr. H. Bence Jones, F. R. S.

Not long since a positive statement was made to me regarding the effect of lemon-juice on the acidity of the urine. I was assured that occasionally it made the urine alkaline. I knew, from the analysis of lemon-juice, that there was so little alkaline and earthy salts present in it, that they could not produce this effect; and I knew from the variations that take place in the acidity of the urine in health, that most probably a result that was simply *post hoc* was considered as *propter hoc.* Moreover, I had an imperfect recollection, that many years ago I had made some accurate experiments, which I had not published, to determine what effect the lemon-juice had on the acidity of the urine. After a long search, the notes of the experiments were found.

It is very evident that the natural variations of the acidity of the urine are so great as almost to hide the effect which even twelve ounces of lemon-juice in the day can produce.

Nearly 400 grs. of citric acid in the lemon-juice raised the acidity nine degrees higher than it rose on the previous day when no acid was taken, and uric acid crystals were found. But the decrease of acidity that occurred when food was taken was just as great on the day the citric acid was taken as it was on the day when no citric acid was taken. When the lemon-juice on the following day was again taken, the rise of acidity was not quite so high as on the day previous; but uric acid crystals again formed in the urine, and the decrease of acidity after food was ten degrees less than at the same hour on the first day when no lemon-juice was taken. On the day following those two on which lemon-juice was taken, no variations of the acidity of the urine occurred that could be attributed to the action of the lemon-juice.

The effect upon the acidity of the urine of this large quantity of citric acid in the lemon-juice is quite evident. But the natural variation of the acidity is less influenced by the acid than might have been expected; in other words, much less citric acid passed off by the kidneys than was taken into the stomach.

It is very apparent that the action of digestion far surpasses the action of large doses of lemon-juice on the urine. So much so, that if the urine had only been examined four hours after breakfast, its alkalescence might have been attributed to the action of the lemon-juice. And there can be no doubt that the statement, that lemon-juice makes the urine alkaline, arose from some observation of this kind.

The pre-eminence of the natural variations is also seen in the experiments on the variations of the acidity of the urine when full doses of sulphuric acid were taken, published by me in the *Philosophical Transactions* for 1849.

The result when tartaric acid was taken agrees very closely with the results when lemon-juice was taken, allowance being made for the difference in the amount of acid in the lemon-juice and tartaric acid, and for the average acidity of the urine being higher when the lemon-juice was taken than it was when the tartaric acid was administered.

The amount of citric acid taken daily in the lemon-juice was from two and a half to four and a half times more than the amount of tartaric acid; and from these experiments also it can be seen that a small portion only of the tartaric acid taken passed off in the urine.

Generally, then, it may be said that lemon-juice and tartaric acid have the same action in increasing the acidity of the urine, and that neither of these acids, even when taken in very large doses, produces as much effect on the acidity of the urine as is produced by the action of digestion.

It is very desirable that a much longer series of exact experiments on the variations of the acidity of the urine when vegetable and mineral acids are taken in health should be made; and the effect of sugar and starch in increasing the variations of the acidity of the urine should also be determined. Then we shall have better reasons for some of our rules of diet than we at present possess; and we shall be able to use these substances with more effect as remedies. The contrast of a purely vegetable diet with a purely animal diet for a very short period in effecting variations of the acidity of the urine I have given in the *Philosophical Transactions* for 1849.

Generally in the treatment of ammoniacal urine, long courses of mineral acids have no distinct chemical effect upon the urine. Vegetable acids and sugar have also no immediate visible effect.

For good observations the reaction of the urine must be determined at a fixed period each day, at the time when the digestion is not going on; and the length of time that the urine has remained in the bladder must, as far as possible, not vary in the different experiments.

When accurate observations are made, it will never be found that lemon-juice, or any other free vegetable or mineral acid, can cause the urine to become alkaline; although, when there is an irritable stomach, the urine may frequently be found to be alkaline during digestion, even when vegetable and mineral acids are taken in large quantities.—*St. George's Hospital Reports, Vol.* iv., 1870, *p.* 3.

SURGERY.

AMPUTATIONS, DISLOCATIONS, FRACTURES, &c.

87.—OBSERVATIONS ON AMPUTATION AT THE HIP-JOINT.

By Thomas Annandale, Esq., Surgeon to the Edinburgh Royal Infirmary.

[Although the immediate risks of amputation at the hip-joint have been considerably diminished by the introduction of chloroform and efficient compression of the abdominal aorta, yet the result of cases from the exhaustion attendant upon healing of such a large wound is too often fatal.]

I think it is justifiable to consider, that the immediate shock to the system, caused during the infliction of this and other large wounds, is much diminished, if not prevented, by having the patient completely anæsthetized; and there can be no doubt also that, with the assistance of the abdominal clamp, amputation at the hip-joint may be performed, with the loss of only two or three ounces of blood.* Surgeon S. U. Gross says, "The ratio of mortality in all hip-joint amputations has certainly diminished since the introduction of chloroform, and I think we possess in it a powerful agent against shock, which in former days was so fruitful a source of mortality." He says, further, "Hemorrhage, as a source of danger, is now robbed of its terrors by the employment of the abdominal tourniquet for compressing the aorta." Mr. Gamgee, in his interesting account of a case of amputation at the hip-joint, remarks—"But so effectual was the aortic tourniquet that the great arterial mouths were left open and dry, and the operation was concluded as deliberately, and with as little hemorrhage, as an ordinary amputation."

Mr. Erichsen, in his remarks upon this amputation, says, "The employment of Lister's aorta compressor will probably still further reduce the mortality, by lessening the loss of blood, and thus proportionately diminishing those risks of low secondary disease that are induced by serious hemorrhage." Professor Miller, remarks, "The operation is certainly deprived of its horror and danger, to a great extent, by the use of chloroform, and by the employment of the abdominal aorta compressor."

Seeing, however, that even with these improvements the mortality of amputations at the hip-joint is so great, it becomes an important question for the practical surgeon to inquire whether this mortality cannot be still further diminished?

In considering this question, my remarks apply only to those cases in which it is necessary to remove the entire femur by disarticulation, and I would ask—

First, *Can the cut surface made in this amputation be in any way diminished so as to lessen the general shock?*

In some cases requiring this formidable operation, the surgeon has no choice, but must cut his flap or flaps from the most convenient aspect of the limb, and perform disarticulation. In other cases the operation may be performed according to rule, that is, by antero-posterior or lateral flaps, for these are the methods now usually recommended when there is a choice of proceeding. In a few remaining cases the soft textures may be divided at a lower level (through or immediately below the trochanters), and the head of the bone then dissected out or disarticulated. It might reasonably be supposed that the last of these methods would be the least dangerous—(1st), Because the soft textures are divided further from the trunk; (2nd), Because the wound is apparently smaller.

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* The total loss of blood may be still further diminished in many cases by carefully bandaging the limb, and raising it above the level of the trunk for a few hours before the operation. This proceeding is especially *useful in cases of* large and vascular tumours.

Erichsen in his observations on cancer of bone, remarks,—"When the lower part of the thigh bone, however, is involved, amputation through the trochanters may sometimes be substituted for disarticulation at the hip-joint, the latter operation being so formidable and so fatal that the surgeon may not think it advisable to subject the patient to so serious a risk; or amputation might be performed through the trochanters, and then the head of the bone extirpated from the acetabulum. In this way the severity of the operation and the extent of incised surface would be lessened, whilst the whole of the diseased bone would be removed."

Surgeon R. B. Bontecou, in his evidence on amputation at the hip-joint, says, "I should, however, make the operation by circular incision of the upper third, soft parts permitting, and enucleate the bone by incision, carried up the outside of the limb to the trochanters, believing that the hemorrhage and shock to the system would be less than by the usual methods."

Acting on this principle, I have during the last twelve months operated upon two cases. In the one case the amputation was performed according to Surgeon Bontecou's plan for long standing ulceration of the leg and thigh, and proved fatal on the fifth day. In the other, the operation was performed by cutting a short anterior and a short posterior flap immediately below the trochanters, sawing through the bone, and then dissecting out the head of the femur after the vessels had been secured. The disease in this case was a cancerous tumour affecting the lower third of the femur, and the patient lived until the fifth week, when he was suddenly seized with a difficulty of breathing, and died forty hours after. The post-mortem examination of this patient showed a partially decolorized clot in the pulmonary artery; the surfaces of the flaps were firmly united, but there was an abscess in the acetabulum; there were no morbid traces of pyæmia.

Being anxious to determine the relative extent of cut surface in these methods of amputating at the hip-joint, I recently made the following observations:—

In an adult male subject, I performed amputation of the right leg at the hip-joint by a long anterior and a short posterior flap, and removed the left limb by cutting a short anterior and a short posterior flap immediately below the trochanters, sawing through the trochanters, and then dissecting out the head of the bone. Having then carefully arranged the flaps, and filled up the acetabular cavities, I took a cast of the whole cut surface in each stump. In order to obtain a cast of the surface of a circular amputation, I made a circular division of the soft textures in the left stump opposite a point immediately below the trochanters, and at the same time carried an incision upwards from the outer edge of the wound to the top of the great trochanter, as suggested by Surgeon Bontecou. A cast of the surface of this stump was also taken. Three casts were thus obtained, which, for the sake of convenience, may be named 1, 2, 3. On first looking at these casts, it appeared that the two obtained from the stumps made by a low division of the soft parts had a much less extensive cut surface than the other; but in order to determine this, I asked Messrs. Blyth and Cunningham, the eminent engineers, to measure these surfaces for me. The following is the report of their careful measurements:—

Cast 1, taken from amputation at the hip-joint by a long anterior and short posterior flap, measured 70·54 square inches.

Cast 2, taken from amputation immediately below the trochanters by a short anterior and a short posterior flap, measured 80·75 square inches.

Cast 3, taken from amputation immediately below the trochanters by circular incision, measured 76 square inches.

This question must, therefore, I think, be answered in the negative; for, if my observations be correct, they prove that the extent of cut surface in the amputation usually performed is considerably less than that resulting from the other methods referred to; and I do not think that the mere division of the soft textures at a lower level can compensate for the larger cut surface which such a proceeding causes.

Second, *Can any special treatment of the wound be adopted, so as to influence or lessen the irritation and suppuration during the progress of its healing?*

This question may, I think, be confidently answered in the affirmative.

The valuable observations of Mr. Lister, and the recorded experience of other surgeons, have undoubtedly proved that the suppuration and local and general irritation connected with the largest wounds, are entirely prevented, or very much lessened, by the careful employment of carbolic acid or other antiseptic means.

An additional assistance in preventing or lessening the local irritation is the use of the antiseptic ligature (silk or gut), to secure the divided vessels. In my cases of amputation at the hip, the femoral artery and vein and the smaller vessels were secured with complete success in this way (with gut), and I have, during the last twelve months, used the same ligature successfully in three cases of amputation through the thigh, and also in many other operation wounds.

It is to these means, and to a careful attention to the diet and general condition of the patient, that, I think, we must trust, in order to diminish the mortality following amputation at the hip-joint and the infliction of other large wounds. My own experience of the antiseptic treatment leads me to express a strong opinion that, with care, it will prove successful in bringing about this happy result.

My conclusions in connection with the subject of amputation at the hip-joint consequently are—

(1.) That chloroform or ether, and the abdominal compressor, are valuable aids in diminishing the immediate risks of this operation.

(2.) That the shock resulting from this operation is not influenced by any low division of the soft textures.

(3.) That the careful antiseptic treatment of the wound, and the use of the antiseptic ligature, are the means most likely to diminish the secondary risks of this operation.—*Edinburgh Medical Journal, April,* 1870, *p.* 881.

38.—ON AMPUTATION OF THE THIGH.

By William Stokes, Jun., Esq., Surgeon to the Richmond Surgical Hospital, Dublin.

No topic in surgery has of late years more actively engaged the attention of surgeons than that of determining the method of amputation of the thigh, which is fraught with least danger to the patient, and affords the most satisfactory results, not only as regards the appearance, but also the form of stump which can be best adapted to the subsequent application of mechanical appliances. The fact that many of such operative procedures have each of them advocates, is a sufficient proof that the opinion of surgeons is still to a great extent unsettled as to the best mode of thigh amputation. There can be little doubt that of the comparatively novel procedures the "rectangular method," suggested first by the late Mr. T. Pridgin Teale, and which in the Dublin School has found such a warm advocate in my friend, Mr. Croly, is one which, perhaps more than any other, has found favour among surgeons. This results from the supposed advantages of this operation, which are doubtless familiar to my readers, and which it is therefore unnecessary to enumerate. However, objections have been raised to this method which are not by any means devoid of foundation. These are—1st, the great extent of cut surface that the operation necessitates; 2nd, the longitudinal division of muscular tissue; and 3rd, the high division of the bone. The amputations of Spence and of Carden get rid to a great extent of these defects. Of this latter operation, the amputation by a long anterior skin flap, notwithstanding the favourable accounts Mr. Carden gives of his results, I cannot think highly. The operation which seems to me to get rid best of two of the supposed defects in Mr. Teale's amputation—viz., the extensive division of muscular tissue, and the high division of the bone—is the method which has been suggested by Mr. Wharton.

It is, I believe, an undisputed fact that, at all events in amputation of the thigh, the nearer to the trunk the bone is divided the greater is the risk to the patient. Dieffenbach, in one of his lectures on amputation of the thigh, pithily expresses this in the sentence, "Zollweise steigt die gefahr," which freely rendered in English means, "the danger increases by the inch." Any modification therefore of the method of the rectangular amputation, which has for its object the saving of bone, and which, in all other respects, affords equally good results as in the method recommended originally by Mr. Teale, must obviously be an improvement. The modification may be given in Mr. Wharton's words:—"Let the measurements for Teale's amputation be accurately taken and mapped out, but instead of dissecting the bone—I am now specially referring to the thigh at the site directed by him—let it be sawn at the situation corresponding to the inferior termination of *his* posterior flaps, and let the superior boundary of the anterior flap be limited by the same plan. The saving of bone thus affected will be considerable, and therefore tend directly to diminish the mortality of thigh amputations. According to this method the anterior flap will be shorter by a fourth than Teale's, and there will be no posterior flap." As this proposal appeared to me to be based on sound surgical principles, I determined that I would give it a trial the first opportunity that occurred.

Shortly after this, J. Hoey, aged thirty-four years, by occupation a sailor, was admitted into the Richmond Surgical Hospital on account of very extensive lupoid ulceration of the right leg. It commenced about eight years ago after a fall over a rope, against which the lower part of the leg struck, which he sustained while running along the deck of the vessel during a dark night. Shortly after this, ulceration appeared in the situation where the injury had been received, and commenced to spread extensively.

For some time after his admission into hospital the case was actively treated, both locally and constitutionally, and very considerable improvement took place. So much so, that he was making arrangements to return home, when suddenly a sloughing process supervened, having many of the characters of hospital gangrene. This spread rapidly, engaging the dorsum of the foot, and laying bare the tendons, muscles, and arteries. From the latter, which became ulcerated and opened, very sharp hemorrhage occurred, which was with much difficulty controlled; indeed, it was not satisfactorily arrested until I passed acupressure needles under the vessels, and made pressure on the arteries by passing loops of wire across the needles. The "third method of acupressure" was adopted, and proved in every respect perfectly satisfactory. As the disease spread close to the knee-joint, I did not think it advisable to amputate below the articulation, and I was also deterred from doing so from the fact of the disease attacking the stump, and I did not think either that I could get sufficient healthy integument to cover the broad cut surface of the tibia in front. Behind, I admit, I might possibly have obtained a sufficiency, but I was deterred from making the attempt by a very strong objection which I have to long posterior flaps taken from the calf of the leg. All things considered, I deem it preferable to amputate above, but as near to the knee-joint as I could, and I have not, I must allow, been disappointed in the result, whether as regards situation of the amputation or the method adopted.

It is unnecessary to enter into any of the minute details, either as regards the operation or the subsequent progress of the case. The former was performed without any deviation from the proposed modification of Teale's amputation, and of the latter, one mishap has to be recorded (though in truth, it might be adduced as an argument in favour of the operation to those who object to the modification on the grounds of there not being a sufficiency of flap), and that was, that four or five days after the operation a small portion of the anterior flap sloughed away; but, notwithstanding this, there appears to me to be an ample covering of soft parts on the face of the stump. Now, what are the objections which have been urged by surgeons against the modification?

They are six in number, and may be briefly enumerated as follows:—

1. The cicatrix being too near the face of the stump.
2. Tension of soft parts on the face of stump.
3. Insufficiency of covering.
4. That, owing to retraction of the tissues, the posterior surface of the bone projects and is denuded of soft tissues.
5. Liability of cicatrix to become adherent to the immediately subjacent bone.
6. Increased risk of pyæmia.

As regards the first of these objections, I would remark that it appears to me that instead of the cicatrix being too near the face of the stump, the chances are that, owing to the retraction of the posterior tissues, it will be further away from the face of the stump than in the operation as originally suggested by Mr. Teale. When the posterior tissues are divided, they immediately retract, and the retraction does not cease at the time of the operation, but continues during the process of healing—a fact recorded long since by Alanson—and consequently the cicatrix is drawn high up on the posterior surface of the limb. So much, then, for the cicatrix being too near the face of the stump.

The second objection is the liability to tension of the soft parts on the face of stump. This, it has been said, exists in Hoey's case. It may, I confess, be there to a certain extent; but I do not think that it will in any way interfere subsequently with the usefulness of the stump. As regards this point, too, it must be remembered that he had a certain loss of tissue from sloughing of the anterior edge of the flap. Had that not taken place there can be no doubt we should not have had the amount of tension, such as it is, which has been observed.

The result of my case shows also that the third objection, viz., insufficiency of covering, is not a valid one.

The fourth objection is one which Mr. T. Pridgin Teale, the son of the originator of the rectangular flap operation, has made in a letter which he published in the *British Medical Journal* for Nov. 7, 1868. He observes, "if, however, the posterior tissues be divided opposite the point selected for sawing through the bone, they immediately retract to a point higher up, and thus leave the posterior surface of the bone projecting and denuded of soft tissues." At first sight this appears a grave objection; but we need not fear this so much when we reflect "that," as Mr. Lister observes, "it fortunately happens that the bone lies forward among the muscles, so that even its posterior surface is considerably anterior in position to the longitudinal axis of the limb." The tendency is always for the bone to come forward; and if a proof of this were wanting, we have only to bear in mind the fact that in cases where ulceration of the flap takes place, it is in the great majority of cases through the anterior and not through the posterior or lateral position of the stump that the bone protrudes.

Projection and dinudation, therefore, of the bone posteriorly need not, I think, be apprehended.

The remaining objections to the modification—viz., the liability of the cicatrix to become adherent to the immediately subjacent bone, and the increased risk to pyæmia, need not, obviously, be dwelt upon.

Such, then, are the advantages of this modification of Teale's amputation, the chief objections which have been raised against it, and the way in which it appears to me they may be best answered. Although I have performed the operation frequently on the dead subject, I have only performed it once on the living.

I should be sorry to advocate this operation in preference to all other methods of amputation of the thigh. This I do not wish to do, for the result of my experience so far, in amputation cases, is in favor of the circular method, for in this, the subsequent chances of pyæmia are, I think, diminished, as there is less exposure of soft tissues, and the veins are divided vertically, at right angles to their continuity, and not obliquely, as they are in all flap amputations, which latter must render these vessels more liable to take on inflammatory action, from the wounds in them being necessarily so much greater in extent.—*Dublin Quarterly Journal, Feb.*, 1870, *p.* 125.

39.—ON A CASE OF COMPOUND DISLOCATION OF THE ANKLE, WITH OTHER INJURIES; ILLUSTRATING THE ANTISEPTIC SYSTEM OF TREATMENT,

By Joseph Lister, Esq., F. R. S., Professor of Clinical Surgery in the University of Edinburgh.

[A labourer, thirty years of age, had been seriously injured on a railway a few hours before admission to hospital.]

When I saw him, about 8.30 a.m., he was suffering considerably from shock; and he feared, from severe pain which he felt in his chest, that he had received some serious internal injury, an apprehension which has happily proved groundless. I found the left foot much displaced inwards, and the end of the fibula protruding through a vertical wound in the integument two or three inches in length, the end of the protruding part being comminuted. The tip of the malleolus had been broken off, and remained attached to the external natural ligament. The internal malleolus was of course fractured, as a necessary condition of such a displacement of the foot. Now, if you were experienced surgeons, you would know that this was a most formidable injury. Recoveries from it were formerly exceptional. Mr. Syme informs me that at one time, on looking into the hospital records, he found that the last fourteen cases of compound dislocation of the ankle admitted into the infirmary, had all ended fatally. He therefore came to regard amputation at the ankle as the best treatment in most cases; though he sometimes modified his practice so far as to content himself with removing the end of the tibia, so converting the case into one of excision of the ankle.

In our patient, however, neither of these procedures has been adopted. For the purpose merely of facilitating the return of the protruding end of the fibula, I nipped off a portion of it with cutting pliers, and, with the same object, enlarged slightly with scissors the lower end of the rent in the skin, which opposed a barrier to its passage. But to all intents and purposes the dislocation was simply reduced. The case, however, was treated antiseptically. Watery solution of carbolic acid, as strong as it can be made (one part of the crystals to twenty of water), was thrown into the joint with a syringe, the edges of the skin being held together to prevent its escape and cause its penetration to all the internal recesses of the wound; and this was further promoted by free manipulation of the injured part while the fluid was still in the interior. There was a time when we should have thought that to introduce an irritating liquid like this into the ankle-joint would be to take an unwarrantable liberty with the articulation. But we now understand that the transient irritation caused by the antiseptic lotion is nothing compared with the abiding influence of the far more acrid products of putrefaction. In the operation which you saw me perform just now [the removal of a fatty tumour] a lotion of half the strength (1 to 40) was employed; experience having proved that this is sufficient to ensure destruction of the putrefactive organisms in a wound just made, and made by the surgeon himself. But when the injury has been received some time before you see the patient, and inflicted, as in the present instance, in a rude way, involving the chance of foreign material having been introduced and mixed, perhaps, with clots of blood lying in inaccessible recesses of the wound, it seems wise to employ as strong a solution as water will produce. And as this will be your only chance of acting upon putrefactive particles lodged in the interior—as the work of their destruction must be done once for all at the outset,—do not be afraid of dealing very freely with the injured part in introducing the germ-poison. [It is a mistake to mingle spirit of wine or glycerine with the watery solution used for injecting the *wound. The* admixture of either of these materials with water containing a given amount of the acid in solution, gives it a greater hold upon the acid, and renders the lotion more bland, and at the same time more persistent in its action; and this may, under certain circumstances, be very useful for the purpose of an external dressing. But for the preliminary treatment of the interior of the wound an agent potent for the moment, but transient, is called for, to kill the putrefactive organisms, and, as soon as this is done, to leave the wound as speedily as possible to recover from the inevitable irritation of the antiseptic; and for this purpose no vehicle seems better for the acid than simple water.] The liquid introduced having been squeezed out, the process of injection and manipulation was performed a second time for greater security, and the skin in the vicinity having been previously well washed with the lotion to destroy organisms adhering to it or to the hairs, an external dressing was applied, similar to that which you have seen used after removal of the fatty tumour. Lac plaster was wrapped in two layers round the limb, from three or four inches above the upper extremity of the wound to as far below its lower end—that is to say, extending well up the leg and embracing the heel and instep; the foot meanwhile being held in good position. A cloth, to absorb the blood and serum which would be discharged from beneath the margins of the plaster, was then bandaged on, and a splint applied to the inner aspect of the leg and foot. [The lac plaster has been very much improved of late, by being incorporated with a soft cloth, instead of being spread upon starched calico. It is thus rendered beautifully flexible, and at the same time much more durable, the cloth incorporated with it enabling it to withstand any amount of wear and tear. But, as in this form it is very thin, it is well, where much discharge is anticipated, or when a long time is intended to elapse between the dressings, to use it in two layers, so as to double the store of the acid in the application. (This plaster in its best form may be obtained from the old Apothecaries' Company, Virginia-street, Glasgow.)]

But the compound dislocation of the ankle was not the only injury which this poor man received. Observing some blood about his hair, I examined the head, and found four scalp wounds, varying in length from two to five inches, three of them exposing the bone, into which black dirt had been ground—probably, as he suggests, by the fire-pan of the engine. We used to reckon that when the bone was thus extensively exposed in a scalp wound, and subjected at the same time to such violence, the cure was pretty sure to prove tedious, protracted by the exfoliation of osseous scales of greater or less thickness. There was at the same time more or less risk of head symptoms or of erysipelas. It is, therefore, very satisfactory in such cases to be able to reckon on primary union under antiseptic management. The region occupied by the wounds being extensive, the greater part of the scalp was shaved, and thoroughly washed with the strong antiseptic lotion; and the wounds were treated just like that at the ankle; except that their edges were approximated by antiseptic sutures. [The material which I have used of late for this purpose is silk steeped for a while in a mixture of melted bees'-wax, with a certain proportion of carbolic acid—say a tenth part. As the silk is taken out of the hot liquid, it is drawn through a dry cloth to remove the superfluous wax; after which it may be wound on a reel, and kept in any close vessel. The wax, besides giving the knot a better hold, prevents the antiseptic from being washed out of the thread, and also, filling up the interstices of the fibres, renders the silk incapable of imbibing stimulating liquids; and so confers an unirritating quality corresponding to that of the metallic suture, over which the suppleness of the thread gives it a great superiority.] When all had been stitched up, each wound was once more injected with the strong watery solution, to correct any mischief that might possibly have been introduced by regurgitation of blood that had oozed into the cavity during the insertion of the stitches. A well overlapping cap of lac plaster, in double layer, was then applied, surrounded by a cloth to absorb discharge, secured by bandage and pins. I cannot too strongly impress upon you the importance of having the plaster extend freely beyond the wound at every part, so that the discharge may have to travel a considerable distance beneath the impermeable antiseptic layer before reaching the sources of mischief externally. It is only in this way that you can guard securely against the spread of the putrefactive fermentation into the wound. Yet there is nothing in the antiseptic treatment that I find more apt to be neglected.

After I had left the patient, Dr. Cleaver [the house surgeon] discovered a compound fracture of the right olecranon. The patient thinks he must have fallen upon his elbow; and in this he is no doubt correct, the fracture having been thus caused by direct violence. The wound was not large; but, from the relations of the bone, it necessarily communicated with the articulation. Here, then, was another injury, in itself sufficiently serious—a compound fracture into the elbow joint. This Dr. Cleaver treated in a manner similar to that in which I had dressed the ankle, and applied an anterior splint to maintain extension of the elbow.

Now I do not hesitate to say that if our antiseptic means succeed as such—that is to say, if putrefaction is prevented from occurring in the wounds—neither of these severe injuries, the compound dislocation of the ankle, the compound fracture into the elbow-joint, nor the scalp wounds exposing and injuring the bone, will occasion either local or constitutional disturbance. You may perhaps think me bold to speak in this confident way at so early a period of the case, at the beginning of the fourth day, the very time when, under ordinary treatment, the region of the ankle would be red, swollen, and painful, preliminary to suppuration, and the pulse rising, with other indications of increasing fever. But the progress of the patient already goes far to justify me. All the injured parts are as yet in a perfectly quiet state, his pulse is daily descending, his tongue is clean and moist, and he relishes his food, and complains of no pain whatever, except that of the contusions of his chest and shoulder. *You* cannot suspect me of exaggeration, for you have only to go to the patient's bed and inquire for yourselves; and any of you who are disposed to witness the dressing will see it done to-morrow at the visit hour.

But besides the favourable condition of this patient hitherto I have ample experience to found upon. Since my attention was first drawn to antiseptic surgery I have been concerned in four other cases of compound dislocation of the ankle. One of them was treated in the Glasgow Infirmary just before I left it. The displacement of the foot was inwards, as in our patient, though produced in a very different way. (See *Lancet*, Jan. 1, 1870.) The treatment also was the same; and the wound, which was large, became a superficial sore, without suppuration or any local or constitutional disturbance.

Another of the cases was also a dislocation inwards, caused by a lady being thrown out of a dog-cart. She was not under my care, but I was in so far concerned in the treatment that the son of her medical attendant (Dr. Coats, of Glasgow) being at that time one of my dressers, he was asked by his father to employ the means which he had seen me use at the hospital. In accordance with my practice at that time, an oily solution of carbolic acid was introduced into the joint and into the rest of the wound, and a layer of putty, rendered antiseptic by the admixture of a certain proportion of the acid, was used for the external dressing. The means were different, but their object was the same. The oily solution destroyed organisms existing in the wound; and the putty, like the lac plaster, impermeable to watery fluid, communicated the volatile antiseptic stored up in its substance to the discharge that flowed out beneath it. The case was published by Dr. Coats, who told how, after the first smarting caused by the acid had subsided, the patient was free from the pain previously experienced, and never after had any uneasiness in the part. Here also the wound closed without any deep-seated suppuration or any febrile disturbance.

In a third case, a gentleman about sixty years of age, of heavy frame, slipped in going down stairs, and the foot was driven forcibly outwards, the fibula being broken, while the internal malleolus was thrust through the integument. I saw the patient in conjunction with Dr. Geo. Buchanan, of Glasgow; and Mr. Berkeley Hill, of London, happening to be on a visit to me at the time, witnessed the first dressing. The lac plaster was used, but in a way which I have since abandoned, so that I need not trouble you with its details. [After the joint had been injected with watery solution of carbolic acid, and the dislocation reduced, a bit of block tin was placed over the wound to protect it from the stimulating action of the acid in the plaster wrapped round the foot. This was surrounded with a cloth and bandage, which were afterwards daily touched with a strong solution of carbolic acid in oil, to renew a supply of the antiseptic to the lac beneath, which was permanently retained. The tin has since been superseded; and I have found it on the whole, better to change the entire dressings occasionally, in the manner to be described in the sequel.] Though the patient was of gouty habit, and in other ways by no means a very favourable subject, his progress was all that could have been desired had the case been one of simple fracture. [Not one drop of pus appeared till, five weeks having elapsed, and a little serous discharge still continuing, the deeper dressings were removed for the first time, and disclosed a superficial sore with pouting granulations, which healed in a few days under an astringent lotion.]

The fourth case was one in which the injury was inflicted by myself, but was of the same essential nature as those caused accidentally, though its effect was to remedy, not to produce, displacement. The foot had been driven backwards and outwards by the violence which occasioned a simple fracture of the fibula and internal malleolus four months before; and the faulty position having continued during the union of the fragments, the limb was perfectly useless, and the patient, a young man of twenty-nine, had the prospect of going on crutches for the rest of his life. Relying on our antiseptic means, I did not scruple to divide with plyers the callus of both tibia and fibula, though I knew that in so doing I was opening into the ankle-joint. For the case differed in this important particular from those which result from accident, that I could guard with certainty against the introduction of putrefactive mischief while making the wounds; whereas in the accidental cases we cannot help feeling a degree of uncertainty till the first few days are over whether the organisms introduced before we see the patient have been all destroyed, though in truth the method by injection and manipulation which I have described seems to have reduced this to something very nearly approaching certainty. The foot having been drawn forcibly into its proper position by means of pulleys, and retained by appropriate splints, while an external antiseptic dressing was employed on the same principle as the putty and lac plaster, though of different materials, the wounds became superficial without suppuration and without the slightest inflammation or fever; and I have the satisfaction of knowing that he, like the other patients, has now a sound and useful foot.

The dressings were changed entirely on the day after the accident. [In doing this the greatest care is requisite. For the antiseptic injected into the wound on the previous day having been absorbed into the circulation, the extravasated blood, and any portions of tissue killed by the violence of the injury, are as susceptible of putrefaction as if no such treatment had been pursued; and my experience leads me to believe that if, when the dressings are removed, a single drop of serum were to be pressed out by the movements of the limb and then regurgitate into the interior, after being exposed even for a second to the influence of septic air, putrefaction would be pretty certain to occur. The skill required to guard against this risk during the first few days, before the wound has consolidated, used to be a serious drawback to the treatment. But the difficulty and uncertainty arising from this cause have been changed to facility and security by a most simple means—the employment of a syringe, the nozzle of which is inserted beneath the margin of the lac plaster, and, as this is raised, a stream of weak watery solution of carbolic acid (1 to 40) is made to play upon the wound till a piece of calico, soaked with the same lotion, has been placed upon it by an assistant, as a temporary security until the plaster is reapplied. Any examination of the wound that may be desired is made with freedom through the transparent solution thrown over it by the syringe, the wound being never left for an instant without an antiseptic guard. The cloths outside of the lac plaster adhere to its edges through drying of the discharges which *they absorb*, and care must be taken in removing them to hold the plaster down over the region of the wound, so that it may not be, even for a moment, dragged up along with them. These details, while essential to success, are happily, easy of execution.]

The dressing on the day after the accident and subsequently has differed from that used in the first instance in this respect, that, before applying the lac plaster, the wound itself was covered with a layer of material designed to protect it from the stimulating and irritating influence of the carbolic acid in the antiseptic stratum. You have often seen this "protective" in use in other cases, but I desire now to direct your attention to it more particularly.

Of all those who use antiseptics in surgery, I suspect that I apply them least to the surface of the wound. After the first dressing, the object which I always aim at is to have the material in contact with the exposed tissues approximate as closely as possible to the perfectly bland and neutral characters of the healthy living textures. If you consider the circumstances of a simple fracture, which you cannot too often call to mind if you wish to keep your ideas clear and right upon this subject,—if you remember how the severe contused internal wound, with the interstices of the mangled tissues loaded with extravasated blood, recovers quickly and surely under the protection of the unbroken integument, it is plain that all that is required in an external wound is to guard it against the disturbing influence of external agency. The injured tissues do not need to be "stimulated" or treated with any mysterious "specific;" ALL THAT THEY NEED IS, TO BE LET ALONE. Nature will take care of them: those which are weakened will recover, and those which have been deprived of vitality by the injury will serve as pabulum for their living neighbours. Now, of all external agencies the most injurious by far is putrefaction, and this, above all, we endeavour to exclude. But a substance employed with this object, if sufficiently potent to destroy the life of the putrefactive organisms, cannot fail to be abnormally stimulating to the exposed tissues; and these must be protected from its action if the wound is to progress exactly like a subcutaneous injury.

Our "protective," then, should be a material unstimulating in its own substance, and impervious to carbolic acid. At the same time it must be insoluble in the discharges, and sufficiently supple to apply itself readily to the part. But it is by no means easy to find anything fulfilling all these conditions. Gutta percha or caoutchouc, which naturally suggest themselves, transmit the acid from particle to particle of their substance with the utmost facility, and are utterly useless for this object. A metallic plate is quite impervious to the acid. But thin block tin, which I once used, is too rigid, while tinfoil soon wears into holes. I have been lately trying a microscopically thin layer of metal, in the form in which you see it in this specimen. Cotton cloth, coated on one side with caoutchouc, is gilded on the caoutchouc side, and then covered with a film of india-rubber applied in solution. We have ascertained that the gold-leaf thus enclosed between two layers of caoutchouc spread on cloth wears thoroughly well; and, if I can get a manufacturer to enter into the thing, I have hopes of obtaining at last something like a perfect protective. And when this is attained, as the lac plaster is quite trustworthy for excluding putrefaction, our treatment will yield to the full the beautiful results which theory indicates as possible.

There is one more point that must be mentioned with reference to the protective. It is essential that it should be itself antiseptic at the moment of its application, otherwise there would be a risk of its communicating septic particles. This object can be attained by covering it with an extremely thin film of some material soluble in water; so that when dipped into a watery solution of the acid it may be uniformly moistened with the antiseptic, but in so small a quantity as will be rapidly absorbed by the wound and by the skin, so as not to interfere to any material extent with the purely protective office of the application. You will bear in mind that the protective is not designed to have any persistent antiseptic virtue; and that, like the wound at the first dressing, it must be freely overlapped at every point by the antiseptic plaster.

These principles will be found to apply whatever be the materials used for carrying out the antiseptic system. An antiseptic to exclude putrefaction, with a protective to exclude the antiseptic, will by their joint action keep the wound free from abnormal stimulus.

Though we have not yet got a perfect protective, that which we are now generally using answers very fairly, and has this advantage—that the materials for it can be obtained from any druggist's shop. The basis of it is the common oiled silk. I am indebted to my late house-surgeon, Dr. Joseph Coats, now pathologist to the Glasgow Royal Infirmary, for calling my attention to the fact that carbolic acid does not pass nearly so readily through oiled silk as through gutta-percha. But if oiled silk is dipped into a carbolic lotion before applying it, the watery fluid runs from the surface as from a duck's back, and there is risk of septic particles being deposited upon the dry parts, even during the rapid transfer from the vessel containing the lotion to the wound. I had reason to suspect that, in some cases of hollow wounds, putrefaction was actually brought about from this cause; and hence I was induced to abandon the oiled silk for a while. But of late I have had it coated with a soluble film, which entirely removes this objection. The oiled silk is brushed over with a mixture of one part of dextrine, two parts of powdered starch, and sixteen parts of cold watery solution of carbolic acid (one to twenty). The carbolic acid solution is used rather than water, not for its antiseptic property, but because it makes the dextrine apply itself more readily to the oiled silk, and the granular starch is used for a similar purpose. The carbolic acid may be afterwards allowed to fly off without disadvantage; so that there is no need for keeping the protective, like the antiseptic plaster, in a close vessel. Oiled silk thus prepared becomes uniformly moistened when dipped in a watery solution of the acid, so that all risk of communicating putrefactive mischief along with it is avoided; and if it be used in two layers, it opposes a pretty effectual barrier to carbolic acid, as is sufficiently illustrated by the progress of the present case.

On the day after the accident the cloths around the lac plaster applied to the ankle, and even the pasteboard splint and its padding, were found soaked with bloody discharge. On the second day, when the dressings were again changed, the cloths presented only a stain corresponding to a few drachms of tinged serum; so that I thought it safe to allow two days to pass before the next dressing. I believe it to be best in all cases to change everything on the day following the injury; because the effusion from the wound is then of a bloody character, and though the lac plaster certainly sheds the discharge admirably, yet it is possible that a layer of clot may be lying beneath it, which might interfere with its antiseptic operation. But after the first day, sanguineous effusion having ceased, the interval between the times of dressing should be regulated by the amount of discharge to be anticipated; for the more copious it is, the sooner does it exhaust the carbolic acid in the plaster. The lac may happily be always trusted to retain enough of the acid for twenty-four hours, however free the discharge may be. If the stain on the cloths indicates an effusion of only a few drachms, the plaster may be safely left for two days. If the serous oozing be not more than a few minims, the interval may be extended in proportion to the smallness of the amount, till finally, when, as sometimes happens, the plaster is maintained as a precautionary measure though no discharge is present, it may be left for a week without losing its antiseptic virtue. When the interval between the dressings is thus prolonged, the pains taken during the first few days are rewarded by great saving of trouble, as well as by the satisfactory progress of the patient; and when the case is one of fracture, the avoidance of frequent disturbance of the apparatus is of course a matter of most material consequence.

At the next dressing, four days after the accident, the ankle presented an appearance which would have been impossible without antiseptic management. The hollow wound, about three inches long, and gaping about an inch, was still occupied by the original coagulum on a level with the surrounding skin; while the discharge of the last two days had caused only a serous stain of a few minims on the cloths. But this state of things was not merely the result of *antiseptic* treatment. It implied that our *protective*, also, was answering its purpose well. Had the antiseptic been acting directly on the wound, the discharge would have been much more considerable, and we should probably have already had a hollow sore with commencing suppuration. Here I cannot help observing that it seems to me strange that some who have not scrupled to criticise me with great severity should have taken so little trouble to ascertain what I have written on this subject. From the remarks made by some persons, you would imagine that I regard putrefaction as the sole cause of suppuration; whereas my treatment of abscess depends essentially upon the fact that the pus in the unopened cavity, being the result of the inflammatory stimulus without atmospheric influence, is free from putrefaction, so that it is needless to apply the antiseptic to the interior, all that is requisite being to provide exit for the discharge while guarding against the entrance of putrefactive fermentation. Again, from the statements of others you would suppose me to have taught that, if you do but apply carbolic acid freely to a wound, you will prevent suppuration; whereas I have all along pointed out that carbolic acid, being a stimulating substance, will itself induce suppuration by long-continued action on the tissues.

[The facts observed in developing the antiseptic system have thrown great light upon the causes which determine the occurrence of suppuration, and the subject is of such great practical importance that it may be well to take this opportunity of giving definite expression to the conclusions to which I have been led. It fell to my lot several years ago to establish, as the result of an experimental inquiry, that the tissues of the living body are liable to a temporary impairment or suspension of vital energy as the result of extreme irritation; and that this condition, which appears to be the essence of *intense* inflammation, may be brought about in two totally distinct ways—viz., either by the direct operation of a noxious agent upon the tissues, or indirectly through the medium of the nervous system. The same law appears to hold with regard to the causes of the exaggerated but feeble cell-development which results from the continued action on the tissues of some abnormal stimulus in a less intense form, giving rise, according to its degree, to the various phenomena of inflammatory hypertrophy, granulation, and suppuration; the pus-cells being the extreme of excess of quantity and impairment of quality in the product of abnormally excited nutrition. Thus the causes of suppuration divide themselves into two great groups: first, those that operate through the nervous system, or in other words, the inflammatory class, of which the common abscess presents a typical example; and, secondly, noxious agents or stimuli acting directly on the tissues. The latter group are, practically speaking, stimulating salts, or chemical stimuli. These are best studied in the behaviour of a healing ulcer under different kinds of treatment. Small granulating sores sometimes heal by scabbing; and when the surface is thus protected by a crust of dried discharge from the influence of external agency, there is no further effusion either of pus or serum. This is of itself sufficient evidence that granulations have no inherent tendency to form pus (or, as is sometimes absurdly said, to *secrete* it), but only do so when stimulated. The same thing is equally clearly shown by the well-known fact that two granulating surfaces will coalesce when placed in contact with each other. This coalescence would be impossible if they continued to suppurate; and their juxtaposition could oppose no obstacle to pus-formation if they had any innate disposition to it. But their mutual contact excludes the operation of external agents upon them; being freed from stimulation, they cease to discharge, and are then at liberty to coalesce. New examples of the same truth present themselves under the antiseptic system of treatment. The wall of an abscess is similar in nature to the granulations of a sore, and is often regarded as essentially "pyogenic." But if the abscess is opened antiseptically, the pyogenic membrane, being relieved from the inflammatory stimulus which the tension of the pus before induced, and being at the same time protected from the access of the stimulus of putrefaction, is left free from all disturbance, and never forms another drop of pus. But the most striking illustration I ever saw of the properties of granulations, when not subjected to stimulation, was presented by a case of compound fracture, in which an extensive portion of the shaft of the tibia had lost its vitality, and lay exposed in a large granulating sore. The granulations grew up and enclosed the dead bone, which being prevented from putrefaction by the treatment employed, was destitute of the usual acrid properties of an exfoliation, so that the granulations, being not stimulated by it, not only formed no pus from the surface in contact with it, but gradually consumed the dead mass by absorption.

The truth is, that so far from granulations having any inherent tendency to form pus-corpuscles, the important tissue of which they consist is ever disposed to develop into higher forms as soon as it is left free from preternatural excitement. This is beautifully illustrated by the familiar phenomena of the healing ulcer. The granulations are still granulations—that is to say, possess still the same pathological structure, when covered by the pellicle of newly-formed epidermis at the edge of the sore, as when they were exposed. But no sooner does the film of young epithelium protect the imperfect tissue from the influence of external stimulus than the rudimentary structure of the granulations immediately proceeds to develop into the more and more perfect fibrous tissue of the cicatrix.

It being, then, clearly understood that granulations form pus only when abnormally stimulated, we are in a position to estimate the effects of different agents upon them. The simplest case is when an antiseptic substance, like chloride of zinc or carbolic acid, is applied, suitably diluted, to a healthy granulating sore. Not the slightest redness of the surrounding skin, or any other indication of inflammatory disturbance, is produced; yet the granulations, so far as they are exposed to the influence of the stimulating liquid, are excited to superficial suppuration, but form no pus where they are protected from the stimulus by the pellicle of epidermis at the margin. Here, then, we have entire absence of the inflammatory stimulus; but the chemical stimulus of the pungent antiseptic salt urges the superficial cells of the granulations to develop pus-corpuscles.

If the sore is treated with water-dressing, the serum first exuded putrefies in the lint, and the products of putrefaction, being acrid salts, cannot fail to stimulate the surface of the granulations; and accordingly superficial suppuration is induced without any appearance of inflammation, just as under the influence of the antiseptic. Thus, in their effects upon a granulating sore, an antiseptic and a putrid dressing are alike: both excite superficial suppuration by direct chemical stimulation of the granulations. But in their operation on a recent wound there is this all-important difference between them, that the antiseptic stimulates only the surface to which it is applied, and every drop of discharge which it induces dilutes it and renders it less stimulating; but putrefaction being a fermentation, the self-propagating ferment spreads throughout all the recesses of the wound, wherever extravasated blood, or serum, or portions of dead tissue afford nidus and pabulum for its development, and its products become more and more acrid the longer it continues in operation. Antiseptics, then, though they do produce suppuration when applied continuously to a recent wound, are superficial in their action and utterly trivial compared with the deep and virulent effects of putrefaction, which, indeed, often causes death by irritation and blood-poisoning before suppuration has had time to be established.

These conclusions may be exhibited in a diagrammatic form as follows:—

Causes of Suppuration.

Abnormal stimulation of the tissues,	A	Through excited nervous action.	*Inflammatory.*
	B	From the direct action of stimulating salts.	*a. Putrefactive.* *b. Antiseptic.*

This scheme, though not strictly exhaustive, applies to almost all circumstances met with in surgery; and it will be found to conduce to clearness to speak of suppuration as inflammatory, putrefactive, or antiseptic, according to the circumstances in which it occurs.]

If the use of the protective be so advantageous, you may naturally inquire why I did not employ it at the first dressing. The reason is twofold. In the first place, there must necessarily be a considerable discharge of blood and serum during the first twenty-four hours, and hence this is the period in which there is greatest risk of putrefaction spreading into the wound, so that it does not seem wise to interpose anything that can interfere in the slightest degree with the antiseptic action of the dressing. And, in the second place, there is no chance of a suppurating sore being established by the direct action of the antiseptic upon the wound for a single day only. This leads me to speak of a condition of suppuration to which I have not before had occasion to advert—viz., the element of *time*. When the tissues are in a healthy state, no stimulus can induce them to suppurate. It appears that it is only when the tissues have been gradually degraded, under the influence of protracted abnormal stimulation, into the most imperfect of all tissues, which, when we see it at the surface of a sore, we term granulations, that they are in a condition, if further stimulated, to give birth to the still lower progeny of pus-corpuscles. In other words, granulation must precede suppuration, and it is a process which occupies days for its completion. Thus it is a familiar fact to all surgeons that a recent wound in healthy tissues does not suppurate for three or four days when subjected to ordinary treatment—that is to say, the stimulus of putrefying material must act for three or four days upon the tissues before it can induce them to suppurate; and when the first-formed pus is wiped from the wound, granulations may be seen upon the surface.

The same holds with regard to the inflammatory stimulus. Inflammation does not produce suppuration in a day. Whether acute or chronic, it must first degrade the tissues to granulations before it can occasion the formation of pus. This is well illustrated by a common boil, which is a limited inflammation of the cutis vera, so severe at the centre as to destroy the vitality of a portion of the tissue, and gradually shading off to the state of health in the vicinity. Here, though all possible degrees of intensity of inflammation are present between the centre and the circumference, no pus is produced till some days have elapsed. Then the "core separates," as it is said, and the slough is found detached from the neighbouring living tissues, and surrounded by a few drops of odourless pus. But when the slough and the pus are removed, the cavity in which they lay is seen to be lined with granulations. The inflammatory stimulus, like the putrefactive, had induced granulation as a preliminary to suppuration.

In the same way, an antiseptic must act for days upon a wound before it can convert it into a granulating sore liable to suppuration; so that no harm is done by omitting the protective for the first twenty-four hours.

The other injuries in our patient have thus far proceeded as satisfactorily as that of the ankle. The four severe scalp wounds were dressed on the day after the accident, and each was covered with protective before the cap of the lac plaster was reapplied. On the following day, the discharge to be seen on the cloth round the lac was so slight that I thought it safe to leave the head undisturbed for another day. The second dressing was witnessed by some of you just after last lecture. The discharge of the two days amounted to only a few minims of serum, and there was entire absence of redness, puffiness, or tenderness of the scalp. I removed the numerous sutures, each coming out as clean as when it was introduced; and all the wounds seemed already completely healed, except a small superficial raw surface here and there.

[Before proceeding to relate the further progress of the case, Mr. Lister directs attention to a point which he considers as of great practical importance in the injury to the ankle. The day after the accident it became apparent that the vitality of portions of the integument was destroyed both at the anterior margin of the wound, and in detached patches at the outer aspect of the dorsum of the foot.]

Now, if any one of these dead pieces of skin had been left exposed to atmospheric influence, it would have putrefied; and the putrefaction would in all probability have spread along the extravasated blood and serum in the subcutaneous tissue till it had reached the seat of fracture and the articulation, and all our antiseptic treatment of the wound would have proved nugatory. I once saw a case of compound fracture of the fore-arm in which the antiseptic treatment had been pursued with thoroughly efficient means, but after the lapse of some days I was asked to look at the limb in consequence of unsatisfactory appearances. I found the dressings applied perfectly correctly, and I had no reason to doubt that they had been so from the first; but the wound, when exposed, emitted an offensive discharge. On investigation I found a small slough of the skin, about half an inch in diameter, situated some inches from the wound, and just beyond the limits to which the lac plaster had been extended. The little slough had by this time undergone softening from putrefaction, so that the nozzle of a syringe could be introduced through it; and, on injecting some of the watery solution of carbolic acid, I found that it passed freely beneath the integument to the seat of fracture and to the external wound. Whether the skin had been thus extensively detached at the time of the accident, or whether the subcutaneous tissue had been simply loaded with extravasated blood, the spreading of the putrefactive fermentation from the slough exposed to the air was easily intelligible.

It is therefore essential that every isolated slough which may exist in the vicinity of a contused wound should be dressed antiseptically like the wound itself. But it may be asked, how is it possible to secure this at the time of the first dressing, seeing that there is nothing in the appearance of the skin in the first instance to indicate that vitality has been destroyed? The simple rule for attaining the desired object is to let the antiseptic plaster first applied overlap the apparently uninjured skin far and wide in all directions. Then, on the following day, let the integument be carefully scrutinised, when any dead portions will be recognised by a dusky discoloration. Every such discolored patch should then be dressed, as if it were a wound, with a piece of protective and well-overlapping lac plaster. If the protective were omitted, the slough would acquire stimulating properties from the carbolic acid perpetually communicated to it by the lac plaster, and would excite the neighbouring living parts to granulation and "antiseptic suppuration." But if efficiently protected from the antiseptic, as well as from putrefaction, the dead tissues will be absorbed and organised like the clots of blood, new living structures being formed at the expense of the effete but nutritious mass.

Such was the course pursued in the present case; and, the oiled silk protective having been used in two, and sometimes three, layers, the results have approached very closely to those which are theoretically attainable. Some of the smaller portions of slough have been entirely removed by absorption, their place being taken by vascular new tissue. Five weeks after the accident, the large slough at the anterior margin of the wound had been considerably reduced in superficial extent, without the formation of any line of separation. What remained of it was of firm consistence, though of yellowish-white colour. In order to ascertain to what extent the process of organisation and vascularisation had advanced in it, I scratched its central part with the point of a sharp knife, and found that the little incision bled when I reached a depth not above half that of the cutis vera, whereas the original slough had undoubtedly involved, not only the entire cutis, but the subcutaneous fat. The mass of dead tissue, though superficially situated, being protected from the disturbing influence of external agency, was undergoing the same kind of change as is experienced by parts deprived of vitality in the subcutaneous injury of a simple fracture.

The appearance of the wound itself presented an equally striking difference from those met with under ordinary treatment. Even at this late period, five weeks after the accident, the original clot was still to be seen, of an orange-brown colour, on a level with the surrounding skin, but greatly diminished by contraction and also by cicatrisation, epidermic formation having advanced considerably from all parts of the margin of the wound, except anteriorly, where the slough was present. An open sore healing by cicatrisation without suppuration, or even granulation, is something new in the history of surgery, though exactly what might have been expected from what we know of healing by scabbing. At the lower extremity of the wound the new and vascular tissue which had been formed by organisation of the clot was slightly more prominent than the rest, and had somewhat the characters of granulations covered with epidermis. But not a trace of pus had been produced. On the occasion when these observations were made, eight days had been allowed to pass since the last dressing, and in order to estimate accurately the quantity and quality of the discharge, I removed the lac plaster without injecting any watery solution beneath it, knowing that at this late period no risk would be incurred by free exposure of the wound. The bandage outside the plaster being free from stain, the whole discharge of eight days had accumulated beneath the impermeable layer of lac, and consisted only of about two minims of white but thin fluid, together with some desquamated epidermis. I subjected the milky liquid to microscopic examination, and found that the opaque element was composed exclusively of epidermic scales.

The vascularisation of the clot, like that of the sloughs, had been advancing from below as well as round the margins. Fifteen days after the accident I cut into the central part of the then chocolate-colored coagulum, under the protection of a stream of watery solution of carbolic acid, and found that it did not bleed, though the knife penetrated about a quarter of an inch. But on a repetition of the experiment twelve days later, blood oozed up from an incision carried to only about the depth of an eighth of an inch.

The process of organisation of clots and sloughs thus observed in an external wound, though of the same essential nature as that which occurs in subcutaneous injuries, was undoubtedly retarded by a certain degree of abnormal stimulation inseparable from the method of treatment. For, besides the fact that the protective was not perfect—*i. e.*, not absolutely impermeable to the carbolic acid furnished by the lac plaster,—the clot and sloughs were more or less soaked with the antiseptic lotion every time the dressings were changed; and though the acid is soon diffused and carried away by the circulation, this circumstance necessarily operated as a disturbing cause. Hence the rate of healing will be more rapid in proportion to the efficiency of the protective, and also to the length of the intervals that can be allowed to pass between the dressings consistently with security against putrefaction. In the present case the period between the dressings was extended as the discharge diminished, and it may be worth while to mention the successive intervals. From the date of the accident they were as follows: one day; one day; two days; three days; three days; five days; five days; seven days; and finally eight days; bringing the time up to five weeks from the receipt of the injury. But I am not prepared to recommend a longer time than a week, and even that only when the discharge is practically *nil.* Indeed, in our patient, putrefaction did take place in the period following that of eight days. I had intended allowing another week to pass before meddling with the limb, but at the close of the sixth day my house-surgeon informed me that the patient had got up two days before, without leave, and had made his way, on chairs as crutches, to the fire, a distance of several yards; and, further, that there was an appearance of a stain upon the bandage. I therefore exposed the limb, and found that the discharge was considerably greater (amounting to perhaps half a drachm), fetid, and, for the first time since the accident, unmistakably puriform. The dressings removed on the last occasion had been perfectly odourless; and the most probable explanation seemed to be, that the vascular engorgement of the limb occasioned by the dependent posture had induced an unusual exudation of serum from the wound, and that this circumstance, combined perhaps with some movements of the foot, had proved too much for the antiseptic power of the lac plaster at that period after its application. Happily the occurrence was of no consequence, as the wound was practically superficial, and beyond the reach of danger from putrefaction. But it may serve as a warning. And it must ever be borne in mind that, in the earlier stages of such a case as this, where the avoidance of putrefaction may be a matter of life and death, it is better to err on the side of dressing too often, rather than too seldom.

The putrefaction had evidently occurred quite recently, for the clot and sloughs were not yet detached. I clipped away most of the slough, and *scraped off the* clot till I got down to bleeding tissue, and, with the view of correcting the putrefaction in such portions of dead material as remained, I treated the sore with a strong solution of carbolic acid in spirit of wine (one part to five), and, having washed the skin around with watery solution, applied lac plaster, omitting the protective. Next day, however, the putrefaction was reproduced; showing that the antiseptic employed had not thoroughly penetrated the adhering portions of slough. Having at hand some saturated solution of chlorine gas in water (the liquor chlori of the British Pharmacopœia), I applied it freely to the sore and also to the surrounding integument, and then dressed with protective dipped in chlorine water and covered with overlapping lac, as formerly. On the following day the sore was destitute of odour of any kind, while the discharge was greatly reduced. For the future it will be treated as a superficial ulcer.

With regard to the injury to the ankle, it only remains to be mentioned that at the present time, six weeks after the accident, the fracture of the internal malleolus has united firmly, and the foot is in good position; while the patient can already move the ankle-joint through a considerable angle.

The four severe scalp wounds—three of which, it will be remembered, involved exposure and injury to the bone—healed completely, without the formation of a drop of pus. And it was an interesting circumstance that, on the removal of some scabs, one of the silk sutures, which had been accidentally left, was found still securely in its place, three weeks after its introduction, and came away clean and dry, like a metallic stitch.

The compound fracture into the elbow-joint also healed without any suppuration. Five weeks after the receipt of the injury the splint was removed. The broken olecranon was found firmly united, and the patient has now free motion of the articulation.—*Lancet, March* 19, 26, *and April* 9, 1870, *pp.* 404, 440, 512.

40.—ON THE USE OF CARBOLIC ACID IN COMPOUND FRACTURES, WOUNDS, AND BURNS.

By Edwin P. Gutteridge, Esq., Maldon, Essex.

Thinking that the carbolic acid treatment of compound fractures, &c., is not generally adopted, I venture to send the following cases which have occurred in my practice during the last few months, to bear testimony to the wonderful effects produced by this valuable remedy, feeling sure that when once fairly tried and properly carried out, no medical man would go back to the old system of treating compound fractures, and if success does not follow, it arises in most cases from improper management. The following is the plan that I have pursued:—

1st. Having reduced the fracture, I introduced pure carbolic acid into all accessible recesses of the wound. I prefer doing this by means of a piece of lint, held in dressing forceps, and dipped in the liquid, large enough to overlap the sound skin, as the caustic action of the carbolic acid has a stimulating influence, and excoriates the skin.

Having prepared carbolic oil, consisting of one part of carbolic and four parts of boiled linseed oil, I soak a piece of lint, folded three or four times thick, in it, and place it over the wound, the size of the lint being about three inches square, and over this a piece of sheet-lead doubled, rather smaller than the lint, and having straightened the limb, place it in splints. Sheet-lead is superior and preferable to block tin (which is advised to be used by some), on account of the facility with which it can be moulded to any shape that is desired.

For the next three weeks, every day, I pour carbolic oil on the edges of the lint, so that it is kept constantly wet.

If every thing goes on well, I do not disturb the dressing for five or six weeks, when, on taking it off, I find the wound either perfectly healed, or merely a superficial granulating sore with prominent granulations, which require daily for a short time to be touched with sulphate of copper, under which the wound very soon heals.

Since treating compound fractures in this manner, I have never found my patients suffer from any severe constitutional disturbances; the system receives no shock from the accident; no fever follows; the pulse keeps low, never rising above 84 per minute; the appetite remains good, the tongue clean; and there is no formation of pus. In fact, with carbolic acid, compound fractures are rendered simple to the surgeon, and the patient rapidly improves.

Case 1.—David P., higgler, aged 45, on the 6th February, 1868, was thrown out of a cart, and sustained a severe compound fracture of the right leg, the upper fragment of the tibia protruding an inch on the inner aspect. The fracture could not be reduced without enlarging the wound and sawing off the protruding portion of the bone. Afterwards the leg was put up as above described, and in Cline's splints. During the first twelve hours there was considerable hemorrhage, but after that time it ceased. Everything went on well, with the exception that the patient suffered much pain at the seat of injury. At the end of five weeks, on taking off the dressing, the wound was found completely healed.

Case 2.—Henry H., aged 14, on September 3rd, 1868, fell off a horse. Compound fracture of the left leg; the wound small, on the inner side; no bone protruding. He was treated in the same way. Had no bad symptoms of any kind, and did well. At the end of six weeks the wound was perfectly cicatrised.

Case 3.—Henry S., aged 10, on October 19th, 1868, was thrown from a horse. Compound fracture of the right femur, with laceration of the artery profunda femoris; wound on the outer aspect. The bone did not protrude; but the limb was so distorted and distended from extravasation of blood, that from above the knee it looked like a large ball. The leg was very cold; and the boy was much prostrated by the shock of the accident, as well as by the hemorrhage—so much so that it was uncertain whether the limb could be saved. It was merely tied up in a pillow, and the carbolic oil applied as above. On the following day the leg had become warmer; and the boy went on so well that after six days I straightened the leg and applied a long splint, bandaging up only as far as the knee-joint, applying the usual perineal bandage, &c. Six weeks after the accident I took the dressing off, but allowed the splint to remain on for another week. I found a superficial sore, with fungous granulations, the size of a shilling. Applied sulphate of copper daily, and dressed with calamine ointment; and after seventeen days the wound healed. During the whole time the child did well in every way, except that he suffered pain during the first fortnight.

Case 4.—Geo. H., aged 18, a painter, on Jan. 14th, 1869, whilst at his work on a ladder, it slipped from under him, and his right leg was caught between the spokes. He sustained a compound fracture of the tibia, the wound on the outside of the leg being sufficiently large to admit the tip of my index finger. Treated as above. Serous discharge for forty-eight hours from beneath the dressing; but every thing went on well, with the exception of great pain at the seat of fracture. At the end of five weeks the wound had healed, a few granulations only requiring a week's attention with sulphate of copper.

Case 5.—William M., aged 29, an engine-driver on the Great Eastern Railway. On June 15th, 1869, the 8 p.m. train from Witham to Maldon left the rails, and went down an embankment, the engine turning over and burying him underneath, both legs being under the engine. It was above two hours before he was dug out. On examination, I found a comminuted fracture of the left leg, and a compound comminuted fracture of the middle third of the right leg, the wound transverse, one inch in length on the anterior aspect. In consequence of having to convey him three miles, the fractures were not reduced for upwards of four hours. He was treated as above. Hemorrhage happened during the first twelve hours; but afterwards he progressed favourably, although he suffered a great deal of pain for two months, which was relieved by anodynes.

June 25th. Moved him on to a water-bed.

July 2nd. Placed the right leg on a fracture-box.

27th. Removed the dressing, and found the wound completely healed, the *cicatrix the size* of three quarters of an inch. The surface of the skin excoriated from carbolic acid, which had been put on pure on a piece of lint before the fracture was reduced. The union between the broken fragments not perfectly consolidated. The splints were re-applied for six weeks.

Sept. 16th. The leg united, solid, straight, and in every way doing well.

Case 6.—Feb. 12th, 1869: I removed an adipose tumour, weighing two pounds, situated over the right scapula, from William B., aged 56, a miller. Having sponged the whole of the raw surface with the pure acid, and brought together the edges of the skin with seven sutures, the incision being eight inches in length, I placed over it lint soaked in carbolic oil. During the process of healing (fourteen days) not more than a drachm of pus was discharged.

Case 7.—May 1st, 1869: Robert H., aged two years, whilst playing with lucifer matches, ignited his bedgown, and was severely burnt over the chest, abdomen, and thighs. The case was treated for the first week with medicated wool and linseed oil; afterwards with a lotion consisting of half a drachm of carbolic acid to twelve ounces of water. The sufferings of the child were intense until the lotion was applied, when the pain was mitigated in a few hours. Healthy action set up, and the little patient rapidly progressed favourably.

With such satisfactory results as these, there can be no doubt of the efficacy of the carbolic-acid treatment; whereas fractures treated in the ordinary way are frequently attended with local inflammation and suppuration, profuse discharge of pus from abscesses, long-continued exfoliation of bone, hectic fever, and sometimes loss of limb or life.—*Lancet, Nov.* 20, 1869, *p.* 704.

41.—ON WHISKY AS AN ANTISEPTIC DRESSING IN SURGERY.

By Dr. David Blair, Ballachulish.

[Alcohol has lately been used in some of the Paris hospitals as an antiseptic dressing for wounds, and, as it has been the practice in Islay to use whisky for the same purpose, Dr. Blair has had considerable experience in the matter.]

The district (Islay) in which for eight years I practised medicine, is one where whisky distillation is carried on extensively, and where, consequently, as may be inferred, this article can be got undiluted and unadulterated. In any serious cases of accident in which it may be recommended by the medical man, the distillers very liberally give it in the pure state, to be applied under his direction. From this source the poorer classes, who could not otherwise obtain it on account of its high price, are often supplied, and thus the medical attendant is enabled to adopt this treatment in any case for which he may think it applicable. As a dressing to wounds, I have found it not only efficacious, but what is a great recommendation to its use, especially in country practice, it is easily applied. In the wards of an hospital, with the assistance of well-trained nurses, and all the other "appliances and means to boot," it is comparatively easy to carry out any line of treatment, however difficult or complicated its manner of application; but in general practice, and particularly in extensive country districts, where patients are not unfrequently many miles distant from the medical practitioner, and where necessarily much of the treatment must be entrusted to attendants who are not at all times very intelligent or trustworthy, it is of great importance to employ simple means, and nothing can be simpler or less troublesome as a dressing to wounds, than spirit lotions. I usually apply the whisky as follows:—

To remove foreign substances or clotted blood, the wound is first washed thoroughly with strong whisky, it is then closed with stitches if necessary; again bathed with whisky, and covered by a rag and bandage both saturated with the same fluid; and finally, all is enveloped in gutta percha tissue or oiled silk, and directions given to the attendants to wet the bandage from time to time with the spirits. As a rule, the first dressing is not disturbed for three or four days, and afterwards it is changed every day, or every second day, according to circumstances. The principal thing to be attended to is to have the bandage kept wet with the whisky—but not *too wet*, or it will impede the progress of the cure. I have never seen *much* sloughing, and I have not once seen erysipelas occur in wounds treated in this way. Probably because septic germs, if they exist at all, are not numerous in our hyperborean regions.

Since I left Islay, a year ago, I have not used whisky in all my cases of wounds, still I have used it occasionally, and its value has not diminished in my estimation, although I have tried carbolic acid and other antiseptics. The following cases may be given in illustration :—

Case 1.—J. M. P., a boy, aged 10 years, was amusing himself near a corn thrashing machine, his hand got entangled in the wheels, and before they could be stopped, the middle finger and its metacarpal bone were crushed to pieces, the palm of the hand was lacerated severely, the ring finger was denuded of the flesh on the palmer aspect, but the bone was not broken. The boy, having been put under the influence of chloroform, I removed the lacerated part and injured bone, then dressed the wound with strong whisky. The following day, when visited, the boy was sitting by the fireside, supporting his hand on a pillow laid on his knee. He was quite comfortable and cheerful, and could not be induced to remain in bed. I need not detail the progress of the case, suffice it to say that the hand healed rapidly, and I ceased attendance in three weeks.

Case 2.—Boy, 8 years, had his hand caught between the wheels of a hay-crushing machine, which was driven by a horse. Before the animal could be stopped, the hand of the boy was fixed in, and the arm drawn round the wheel so firmly that the little fellow could not be extracted until the machinery had been turned backwards. The thumb and next two fingers were torn off at their articulation with the metacarpus. The palm of the hand and inner aspect of arm up to axilla were lacerated so badly that we feared it would not be possible to save the whole arm; the metacarpal bone of the thumb was smashed and had to be wholly removed. We resolved to take away, in the first place, only what was strictly necessary of the hand, and gave the arm a chance of recovery. The parts were wrapped in cloths with whisky, in the usual way, and the friends directed to wet the bandage two or three times daily. On the fourth day we removed the dressing for the first time; there was no discharge, no inflammation, no swelling. The arm looked well; the case went on uninterruptedly, and I only required to see him thrice.

Case 3.—J. S., aged about 60, had his finger crushed by machinery; amputated part of two of them. Applied whisky; no inflammation, no suppuration. Result good.

In other three cases of amputation of the finger I used it with equal success.

I have also used whisky as an application to bed sores. When fever occurs epidemically in country districts and villages, especially in the Highlands, it generally causes a panic among the inhabitants. The dread of contagion is so great that occasionally no one will venture to undertake the duties of nurse; under these circumstances bed sores are of frequent occurrence. I have seen more than one case in which the os sacrum and coccyx were exposed from sloughing in typhus, and yet the patients recovered. The bed sores were treated with linseed and oatmeal poultices, mixed with whisky, until the slough separated, then whisky lotions were applied.

In cases of chronic and scrofulous abscess, I have used whisky as an injection, and find that it checks the discharge and hastens the cure. In a case of scrofulous abscess of the hip joint I attribute the recovery of my patient to its having been used in this way. The pain and hectic before and for some time after the abscess was opened, caused so much prostration that I had slight hopes of my patient's recovery. I persisted, however, in using the injections two or three times daily, bathed the whole limb often with spirits, and kept it wrapped in cotton wadding and a bandage. The stomach for a time would *not* tolerate solid food of any kind, and even beef tea provoked nausea. *Notwithstanding*, in an incredibly short time, my patient rallied, and I had the pleasure of seeing him able to walk well, although the joint continued somewhat stiff.

In a singular case of abscess, situated beneath the muscles in front of the abdomen, which opened at the umbilicus, I was highly pleased with the result gained by these injections. The discharge obstinately continued, although I perseveringly applied for a considerable time poultices and lotions of different kinds; at last, I resolved to inject with strong spirits, but from the peculiar situation of the abscess, and fearing inflammation might supervene, I used it very cautiously at first, but no unfavourable symptom having followed the first application, by degrees it was used more freely—two or three syringefuls at a time repeated twice or thrice daily. In a few days there was a marked improvement, and soon the discharge ceased completely, and the patient is now well.—*Glasgow Medical Journal*, *Feb.*, 1870, *p.* 205.

42.—ON TRANSVERSE FRACTURES OF THE PATELLA.

By Jonathan Hutchinson, Esq., Surgeon to the London Hospital.

[Mr. Hutchinson concludes a long and able paper upon this subject by the following recapitulation of what he has shown in it.]

1st. That a very remarkable state of physiological inactivity in the damaged muscle results from fracture of the patella.

2nd. That the fact of this inactivity destroys the common explanation of the displacement of the upper fragment.

3rd. That this displacement is usually due, not to muscular traction from without, but to fluid pressure from within.

4th. That the real cause of weak union is the bulging of fluid between the fragments.

5th. That atrophic shortening of the quadriceps often follows these injuries, and, whilst it greatly disqualifies the muscle for extension, renders flexion very dangerous to the uniting ligament.

6th. That an exceedingly interesting and curious occasional result is, permanent and complete atrophy of the muscle concerned.

Should the conclusions which I have stated be confirmed by future experience, it is probable that they will also be found applicable to some other forms of fracture and of injury to tendons. Indeed, it is in the possibility that they may illustrate a physiological law of wide bearing that their chief interest consists.—*Medico-Chirurgical Transactions*, *Vol.* lii., *p.* 339.

43.—FOREIGN BODIES IN THE KNEE-JOINT.

By Henry M. Tyrrell, Esq., Surgeon to the Mater Misericordiæ Hospital, Dublin.

[The patient was a cook, 26 years of age. On admission her left knee was found slightly flexed, the joint was a little swollen and painful, and on any attempt being made to lean on the limb the pain became intolerable.]

The patient, who is of a strong robust habit, gave the following history.

Eight days before admission, whilst discharging her ordinary duties, she was seized with a sudden pain in the joint, which at the same time became fixed in a slightly flexed position; she was unable to walk and had to be carried to bed. On the following day mustard plasters were applied, without affording any relief; these were followed by poultices and other soothing applications, but as no good effects were produced she was recommended to come into hospital, which she accordingly did, her symptoms being as already described, viz., pain and swelling in joint with the limb in a slightly flexed position.

Mr. Tyrrell, considering the case to be one of sub-acute synovitis, placed the joint on a pillow and ordered evaporating lotions to be assiduously applied; in three days the swelling subsided, but the pain and rigidity remained.

Tincture of iodine was now applied to the knee daily for a week, but without affording relief. She also had an anodyne at bedtime. The joint was then blistered with vesicating collodion and the pain ceased, unless when an attempt was made to move the knee. The limb gradually assumed the extended position, but painful startings supervening, a gutta percha splint was applied to the ham, which, by securing rest, gave perfect ease. At the end of a fortnight the splint was removed and the joint strapped with soap plaster, and after a few days the patient was enabled to get about. One day, when the strapping was removed, the patient herself discovered a small tumour on the outer side of the joint in the situation of the external lateral ligament. The tumour was movable, as it slipped away when pressed with the finger. She called Mr. Tyrrell's attention to it, and after a few days' observation it was found that when the tumour could be felt the patient could walk without pain, but when it slipped away the joint became fixed and painful. In a short time a second tumour was discovered, the patient being able to secure both at the outer side of the joint. At this time the patient was unable to lie on her right side, for as she herself described, "when she attempted to do so the lumps fell down to the inner side, and then got into the joint."

There being no doubt as to the diagnosis, efforts were made with various appliances to secure the loose bodies at the outer side of the joint, but after a few trials were given up as useless,

Mr. Tyrrell now determined to remove one of the cartilages, and gave directions to have the patient put to bed and to have a wooden splint applied behind her knee.

On the 7th of July (one week after the patient was confined to her bed) he removed a cartilaginous body much resembling a garden bean in size and shape; it had a short pedicle. The wound in the skin was secured by two ligatures and dressed with carbolic oil. No constitutional symptoms followed. The wound was stripped on the third day after the operation, when it was found to have perfectly united. The sutures were removed.

On the 2nd of October he removed the second cartilage, it was like the first, but smaller, and had no pedicle. The wound was treated like the former one, but the operation was followed by some slight pain and tension, and when the dressing was removed on the fourth day pus escaped—a small abscess had formed. However, the patient got well rapidly and was up eight days after the operation.

A slight weakness of the joint remained for some weeks, but in time it wore away, and she was discharged perfectly cured early in December.

I have forgotten to mention that after each operation cold lotions were assiduously applied over the knee until all danger of inflammation had passed.

We all know that there are two methods of removing these bodies. The one by cutting down to them at once: the other by subcutaneously dividing the synovial membrane and pushing the body into the subcutaneous cellular texture, and, afterwards, when time has been given for the wound in the synovial membrane to heal, either to allow the cartilage to remain in its new position or remove it by an incision of proper size in the skin, according to circumstances. This affection is comparatively rare, and it is very seldom indeed that two have been removed from the same joint.

I myself never saw a cartilage removed from the knee-joint until I did so myself.

On reading up the subject before I operated I was led to believe that the operation is a very easy one, that the body can be easily steadied, and that it starts out when a free incision is made over it, and also that it can be easily pushed into any part of the joint you may select.

My case proves the contrary. In the first place, it is most difficult to steady the cartilages; indeed, it was only the patient herself who could do so satisfactorily, and when operated on she did not take chloroform, but most resolutely and efficiently steadied the cartilages between her two thumbs. It did not start out when cut down upon, and was at a much greater depth from the surface than I imagined. Neither could you select the site for operation, as the upper and external side of the joint was the only place where they could be felt.

As I determined to give the carbolic acid a fair chance, I performed the operation of removing the cartilage by direct incision at once, and dressed the wound as stated, with carbolic oil. The first operation did beautifully; I thought it was owing to the antiseptic plan of treatment, but that could not be so, as in the second operation a superficial abscess formed. Surely, if carbolic acid was the cause of the absence of inflammation in the synovial membrane, it should have prevented suppuration in the part with which it was in nearest relation.

The following deductions may be drawn from the experience gained by this case:—

1st. That foreign bodies may exist for a length of time without giving rise to any symptoms.

2nd. That they are occasionally, even when made most prominent, at a considerable distance from the surface.

3rd. That we cannot always select the situation for removal.

4th. That in cases where the body is at a distance from the surface the subcutaneous removal of it would be attended with much difficulty.

5th. That the success of the case was not due to the dressing of the wounds after Lister's method.—*Medical Press and Circular, April* 13, 1870, *p.* 286.

ORGANS OF CIRCULATION.

44.—ON THE BENEFICIAL RESULTS OF UNDESIGNED AND ACCIDENTAL HEMORRHAGE IN CERTAIN CASES.

By Samuel Hey, Esq., Senior Surgeon to the Leeds General Infirmary.

Every physician is well acquainted with what are frequently called critical hemorrhages, in which a patient, reduced to the lowest point, from that moment steadily recovers; *e.g.*, in typhus, hemorrhoids, and hemoptysis. The surgeon often meets with cases in many points analogous to those above alluded to, but they have not been prominently noticed by surgical writers.

1. Excessive hemorrhage in severe injuries is often followed by speedy recovery, the higher and destructive results of inflammation are prevented, and sufficient power remains only for the adhesive process and union by first intention. Thus a bad case of cut-throat, whose life was despaired of for many hours, recovered completely in eleven days. Again, in cases requiring primary amputation, where the loss of blood has been so great that the operation must be deferred for several hours, the patient not unfrequently progresses favourably to recovery without a bad symptom. This has to me often, through a long course of years, been so striking that I have sometimes ventured to predict a happy termination. In these cases the patient seems to be reduced to the more favourable condition of one suffering from chronic disease. For example, about three months ago, I had to operate on two persons during one week for injury of the upper arm. The first, from gun-shot, had no loss of blood. The second, from severe laceration and compound fracture, was, by hemorrhage, reduced to the last extremity. The first died speedily from traumatic gangrene; the last recovered without drawback. They were about the same age.

Numerous cases of this kind have led me to be little anxious about considerable bleeding during an operation where the antecedent effusion of blood has been slight; having, however, due regard to the constitutional condition of the patient, and his probable powers of restoration.

2. The second class of examples are those in which bleeding is beneficial, though undesigned and unwished for, and, indeed, occurring where it might seem to be the most undesirable.

A gentleman, aged 55, had in the epigastric region a tumour, ten inches in diameter, followed by ascites to the fullest possible extent. The tumour was connected with the liver, was marked with veins on the surface, and was supposed to be malignant. The skin of the abdomen and the lower extremities were excessively œdematous. Paracentesis was performed three times at intervals of six weeks. After the last operation the patient appeared to be dying for several hours; by the use of stimulants he rallied. On the third day, a catheter was introduced through the wound; serum, very deeply covered with blood, was drawn off, and it was then discovered that a deep-seated vein had been wounded, and its contents poured into the abdomen. From this time, recovery commenced, the dropsy disappeared, and he became again a strong and hale man, and is still living at the age of seventy-five.

3. The most common order of instances where undesigned hemorrhage is not only useful but curative, is to be noticed in large, and deep, and intractable phagedænic ulcerations. I have seen this so often that I am almost at a loss to select examples.

A man suffered from a large and deep burn on the chest, and, after many weeks, appeared to be hopelessly sinking. A considerable venous hemorrhage took place from the flabby granulations, and straightway they became healthy, and cicatrisation and recovery took place rapidly.

Many instances have come under my notice where deep syphilitic ulcers in the groin, vulva, and nates, and on the legs, have at once cleared up on the occurrence of considerable hemorrhage, especially where the patients had previously undergone a course of antisyphilitic treatment.

Two patients are at present under treatment at our hospital, one an in-, the other an out-patient, where the nose, lips, palate, and bones, have been to a great degree destroyed. In both instances, a spontaneous, vigorous hemorrhage has cut short the disease, and in one has led to all but perfect cure of the ulcerations, leaving only the unsightly results of destructive disease.

It was only after I proposed to write a few lines on this subject, that I learnt that my friend Mr. Jessop, formerly our house-surgeon, had, in our journal last December, noticed briefly cases where even the femoral artery had been opened by phagedænic ulceration, and the hemorrhage thence arising had arrested the disease. Mr. Jessop now informs me that he has, in one case of syphilitic ulceration, tested by *practice* the value of this teaching of the "effort of nature," by opening the arteria dorsalis penis with every good result.

I only throw out these few remarks to lead to further observation. To enter into physiological discussion would require rather a book than a short unpretending practical paper.—*British Medical Journal, Jan.* 29, 1870, *p.* 101.

45.—ON THE TORSION OF ARTERIES.

By Thomas Bryant, Esq., Surgeon to Guy's Hospital.

[Mr. Bryant having removed a number of the larger vessels from various subjects, and twisted the ends freely, had them filled with a vermilion-coloured wax injection. Careful sections were subsequently made of the preparations. The result has been a number of admirable models, displaying most if not all of the modes in which hemorrhage from a twisted vessel is arrested. The physiological facts shown, and the conclusions drawn from a consideration of these modes are as follows:—]

The facts show that by the torsion of an artery, the inner coats are divided, and in the majority of cases turned inwards, and that in the most perfect examples these incurved coats form complete valves, not unlike the semilunar valves of the heart, on the injection of the vessel, either by the blood of the patient during life, or by artificial injection after death.

They show that in other cases—how many it is difficult to estimate—the valvular incurvation of the divided inner coats is not so perfect as to prevent the passage of a small portion of blood or injection with the first rush of fluid, *although* it is tolerably clear that the valve is subsequently rapidly closed *with any increase* or continuance of the injecting force.

They prove, likewise, that in some cases this valvular incurvation of the inner coats is exchanged for a general splitting of the tissues, hemorrhage being prevented by the clotting of the blood between the irregular laminæ of the divided membrane and the twist of the external cellular coat.

They also prove the great value of the knot formed by the torsion of the external cellular coat; for although in such instances as are shown in figures 1 and 2, the support of such a twist appears to be of secondary importance—the valvular incurvation of the inner coats being apparently sufficient of itself—no one can doubt its value in such cases as figures 3 and 4 are meant to illustrate. And even if, in a large number of such cases, the valve formed by the divided recurved inner coat proves to be perfect after the first rush of the blood-current has taken place, the knot formed by the twisted external coat must prove a valuable support, and in doubtful cases, where an imperfect valve exists, it must be of still greater importance. In figure 5 the presence of the twisted external coat is surely of value, not only by forming an obstacle to the immediate escape of blood through the broken-up inner membrane, but by giving time to allow of complete coagulation of the blood which has been caught between the laminæ of the inner coats.

We come, therefore, to this conclusion—that although there is no physiological necessity in the most complete examples of torsion of an artery, for the preservation of the knot formed by the twisted external coat, there is in the imperfect examples; and as it is impossible for the surgeon to know during life, in any given case, whether the valvular incurvation of the inner coat has taken place in the most complete way or not, and as it is at least probable that an imperfect incurvation of the inner coat exists, it seems to be more prudent for the surgeon to act on the side of caution, and to preserve this twisted external coat in its integrity in all cases.

I look upon the valvular incurvation of the inner coat as the chief means adopted by nature for the arrest of hemorrhage, and the twist in the external coat as an all-important additional security; the elastic and yet brittle inner tunic, with its tendency to adhesive inflammation, requiring, in all but the most perfect examples, during the first few hours after torsion, the support of the tougher external one.

The more the inner coat is broken up by the twisting of the vessel, the greater is the need of the external coat to give it support.

The more the end of a large artery is twisted, the more is the inner coat broken up and the greater is the danger of disturbing its valvular incurvation.

When the end of a healthy vessel is twisted off, the inner coat is, as a rule, greatly broken; when the end of a diseased vessel is so treated, it is split into fragments.

When a limited number of rotations of the forceps—two, three, or four—are applied to a healthy vessel, the valvular incurvation of the inner tunic is, as a rule, complete; and the more diseased the artery, the fewer are the rotations required.

The propriety of twisting off the end of an artery or leaving it on becomes, therefore, a matter of great importance, and a great practical question which has yet to be decided.

From the remarks I have already made it will be evident that my own opinions tend to support the practice of leaving the twisted extremity of the vessel *in sitû*. Dr. Humphry has, however, come to the opposite conclusion. How it is, therefore, that we differ upon this point may claim some brief notice, for his authority is so high that his opinions are readily accepted and his practice followed.

First of all, Dr. Humphry clearly shows in his paper that he does not attach so much importance to the reflection of the inner coat, as a barrier to the flow of blood, as he does to the twisting of the outer coat, forasmuch as by this, he states, "the inner coat is not only forced into, but is held in its new position; accordingly, if a syringe be attached to an artery thus twisted, and water be injected, considerable resistance to the escape of the water is presented; but if the twisted portion of the outer coat be cut through, or dissected off, the water very soon escapes. It has little difficulty in finding its way through the inner coat, or of separating the surfaces, when the support afforded by the outer coat is withdrawn."

These facts are undoubtedly correct, my own experiments have confirmed them; but the test applied to the inner coat by dissecting off the outer is a very severe one, to say the least of it, and applies to conditions that do not naturally exist. The facts tend, moreover, to prove the value of the twisted external coat rather than the weakness of the inner tunic, and suggests to the surgeon the wisdom of doing nothing to weaken the strength of the twisted external coat. Yet it is to be remarked that Dr. Humphry in most of his experiments twisted off the ends of the vessels, and in doing this, I have little doubt, in a large number of cases he not only destroyed the valvular incurvation of the inner coat, and so broke up the tissues as to render the support afforded by the external coat an absolute necessity, but by the same act of twisting off he likewise weakened the external coat upon which safety under such circumstances absolutely depended; for repeated experiments have proved to me that when a mixture of glycerine and water of the sp. gr. of blood is thrown into a large artery, the end of which has been twisted off, it is far more frequent to find some leaking of the vessel through the divided extremity than when the end of the vessel has been only twisted three, four, or five revolutions.

When the arteries are diseased this fact comes out still more clearly, for in a diseased artery the inner coat is so brittle as to break and incurve on one or two rotations of the forceps. One or two more rotations break up the inner membrane into pieces very like those seen in Fig. 5, and by twisting the end off the artery it is very apt to be destroyed.

The twisting off of the end of a large artery crushes up the inner membrane, and too often lacerates the external, destroying by one act the valvular incurvation of the inner tunic, upon which the arrest of hemorrhage so much depends, and weakening the support which the external coat would otherwise give, and which under such circumstances is so much required.

In a recent amputation of the thigh, where the vessels were much diseased, the truth of these remarks was well illustrated, for when I twisted the femoral artery three complete revolutions, the end became so loose that I thought it was off, and leakage followed, but when I took the vessel up again, having cut off the lacerated extremity and twisted its end two rotations, good success ensued. This case illustrates the practical truth that in applying torsion to a diseased vessel a more limited number of rotations of the forceps should be made than to a sound artery.

What we want to effect by the torsion of an artery is a laceration and incurvation of the inner tunic, and to support this incurved membrane by the twist of the external coat. We do not want to crush up the inner tunic too much, or to weaken in any way or to lacerate the external. By twisting off the end of the vessel I have abundant evidence that we incur a greater risk of falling into both of these errors than by making a limited number of rotations of the forceps and leaving the end of the vessel on. All my experiments and observations tend to prove this in a direct way, and the facts that Dr. Humphry has supplied by his experiments go to support the same views.

If it be generally true, therefore, as a modern writer in the last edition of "Holmes's Surgery" has so dogmatically asserted, "that torsion is unsuitable for diseased arteries, and large vessels, even though healthy, cannot be invariably secured by it, Professor Humphry having found in his experiments on animals that the outer coat is sometimes too much weakened by the rotation," he should have added *when rotated off*, for it was made true only from the fact that torsion was carried to too great an extent. For all my experiments and nearly two years' experience have convinced me of the following conclusions:

That torsion may be safely applied to all arteries of the extremities and to all those of the trunk which are in size less than or equal to the femoral. To the carotid and the iliac vessels it has yet to be applied.

That it is almost as applicable to diseased as to healthy vessels, the former *requiring fewer rotations* of the forceps than the latter.

That in large healthy vessels, such as the femoral, the extremity should be twisted till resistance has been overcome, but no further—three, four, or five rotations of the forceps being, as a rule, all that is needed. These rotations should be made sharply.

That in large atheromatous vessels the same rule should be applied, two or three rotations of the forceps generally sufficing.

That in all small vessels torsion may be applied very freely, even to the separation of the end, although when evidence of disease exists it is better to proceed with more caution and not to twist off.

That in every case where a large artery is twisted it is advisable to allow a current of blood to flow into the vessel before the forceps are removed from its end. This caution not only tests the completeness of the act in all cases, but in doubtful ones facilitates the coagulation of the blood in the meshes of the broken-up inner membrane.

For nearly two years I have practised torsion upon arteries and veins of all sizes up to the femoral, and I have seen it practised likewise in all ways. During that period I have never, with one or two exceptions, applied a ligature to a divided artery in an uncomplicated case. No instance of secondary hemorrhage from a large or small vessel has yet been recorded after its use. I have certainly had more cases of primary union of wounds during this period. Stumps have healed more kindly and wounds have closed more rapidly. I have not seen anything to make me hesitate about the value of the practice, but I have seen much to encourage me in its adoption.

It may require some care in its application, but not more than the taking up of a large vessel, and the application of a ligature to its end with neatness. Any surgeon or dresser who can do the one can do the other, and I am not sure that to the inexpert one mode of arresting hemorrhage is more difficult than another. In the practice of torsion to such a large artery as the femoral even rough handling has proved successful (as it has before in the application of a ligature); and when torsion succeeds at the time, every hour that passes strengthens the probabilities of success, whereas, in the case of the ligature, such cannot be said to be invariably the fact.

Torsion may, in exceptional cases, be troublesome to perform; in others it may prolong an operation; and in some cases it may even fail to arrest hemorrhage. But, upon the whole, the adoption of torsion must be looked upon with favour, for it certainly is applicable in the majority of cases, it tends to simplify surgery, to hasten the repair of wounds, to discourage suppuration, and to add to the general safety of our patients. To apply torsion it is only necessary to seize the artery firmly, and to twist it sharply till resistance ceases. Any forceps that hold firmly and do not tear will do; although for large vessels a broad end is required.

At Guy's Hospital, up to the present time, the femoral artery has been twisted at least twenty-two times, the tibial seven, and the brachial three. I have applied torsion in upwards of a hundred cases altogether; no difficulty of any importance has been experienced in any case, and nothing but a good result has yet been recorded. I may add, likewise, that amongst our house-surgeons it is proverbial that since torsion has been employed secondary hemorrhage after operations has been comparatively of rare occurrence.—*Guy's Hospital Reports*, *Vol.* xv., 1870, *p.* 285.

46.—THE ANTILIGATURE FORCEPS.

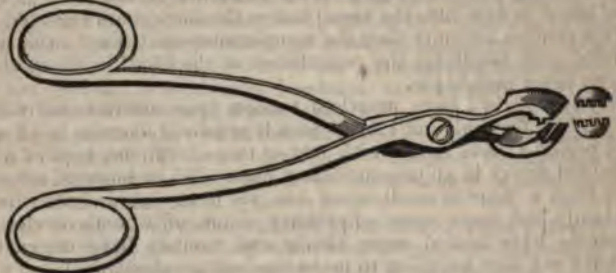
[The following case presents features of much interest.]

Dec. 9, Sarah B., a married woman, aged 46, was admitted into St. Bartholomew's, under the care of Mr. Coote, with a scirrhus of the right mamma. She was operated upon by that gentleman the following day.

As soon as the excision was accomplished, Mr. Webber, who happened to be standing near the operator, suggested the use of the forceps he, it seems, invented many *years ago. Mr. Coote*, who had, it appears, seen Mr. Webber use this instrument with entire success upon arteries of very considerable size in the removal of an unusually large breast, at Brompton, ten or eleven years since, at once acceded to the proposition. The effect upon the divided vessels was instantaneous and perfect.

No blood was lost, no secondary hemorrhage ensued, and the patient made a good recovery. Mr. Coote mentioned this very satisfactory case in his surgical lecture a few days afterwards.

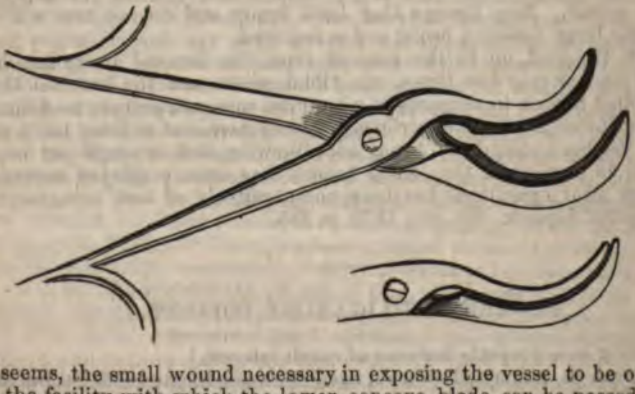
[We have seen the forceps, and its striking effect upon dead vessels, through which, when fresh, after being pinched by the forceps, it is not easy to impel air—so complete is the dovetailing and closure of the divided end of the artery.



We append a wood engraving of the forceps, which is intended to produce the same effect as the gnawing by the teeth of animals in the division of the umbilical cord., They may be obtained from Messrs. Maw.—Ed. *M. T. & G.*]—*Medical Times and Gazette, Jan.* 15, 1870, *p.* 76.

47.—INTRACISOR FORCEPS FOR ARTERIES, TO SUPERSEDE THE LIGATURE.

We are able to place before our readers the engraving of the Intracisor, invented by Mr. Webber, and made by Messrs. Maw, for the purpose of securing all the advantage of the ordinary ligature without entailing any of its strangulating consequences or its inconvenience—as a foreign body left in a wound which it is desirable to heal quickly. Among its recommendations are, it seems, the small wound necessary in exposing the vessel to be operated upon; the facility with which the lower concave blade can be passed under, and made to isolate the vessel from the contiguous tissues; and the complete circumferential division of its inner friable lining, accomplished without interfering with its outer coat when bringing the two blades into close apposi-



tion. We have witnessed the effect of the intracisor on a dead artery: nothing can be more perfect.—*Medical Times and Gazette, Feb.* 12, 1870, *p.* 189.

48.—ON GALVANO-PUNCTURE OF NÆVUS.

By Dr. John Duncan, M. A., Assistant-Surgeon to the Royal Infirmary of Edinburgh.

I have already published in the *Edinburgh Medical Journal* (1866 and 1867) two papers on the use of electrolysis in aneurism, and I related among others a severe case of the cirsoid variety cured by that means. The resemblance in structure between cirsoid aneurism and nævus encouraged me to hope that electrolysis would be as successful in the latter as it had been in the former. It is impossible as yet to ascertain the exact value of this form of galvanism in the treatment of blood-tumours; but the cases I here shortly note may prove of use in determining how far it is applicable to nævi.

Case 1.—The nævus occupied the greater part of the upper eyelid of a child 8 months old, and was rapidly increasing in size. After several operations it was almost entirely hardened, but in consequence of the impatience of the parents the case was completed by subcutaneous ligature.

In *Case* 2, the nævus occupied the upper eyelid of a child 6 months old, and was about the size of a walnut. The skin was implicated only in so far as it had one or two visible veins coursing over the tumour. After five operations the whole was hardened, and greatly diminished in size. As the parents were obliged to return to the country, I lost sight of the child for some time; but I lately heard from them that it died of bronchitis some months after the last operation, and that then the swelling had entirely disappeared.

Case 3 was a nævus of the forehead, implicating the skin that covered it, and was sent me by Sir James Simpson. The child, a year old, was brought from the country by its parents, who took it back immediately after one operation had been performed. The electric action was continued till the skin assumed the whitish hue that indicates cauterization. The child was to be brought back for a second operation if the cure was not complete; but it has not since been heard of. I have no doubt that it was cured.

Case 4 was a nævus of the upper eyelid, very similar to Case 1, but with the skin completely involved. Two operations hardened the subcutaneous portion, which was thereafter largely absorbed. After two months, as it was again increasing, an operation was directed to the cure of the skin, which had not as yet been affected by the electrolysis. Its vitality was destroyed, and a black slough separated almost without suppuration. A cicatrix remained, but did not interfere with the motions of the eyelid.

Case 5.—A nævus of the abdomen, of small size, cutaneous and subcutaneous, in a boy 5 years old. A slough separated after one operation, which effected the cure.

Case 6 was a nævus on the forehead of a child 11 months old, sent me by Dr. Aitkin. It was very flat, from the skin being more involved than the deeper textures. It was cured in three operations, two of which produced small sloughs. I embraced the nævus in a ligature, to arrest the blood-current, while one of the operations was being performed; but this proceeding did not apparently affect the result.

I have since sucessfully treated one or two other nævi in the same way, but as they do not materially differ from those already mentioned, they need not be further detailed. Some were simply hardened, and thereafter became absorbed; others had more or less sloughing, according to the amount of nævous skin.

There can, I think, be no doubt that any nævus is curable by electrolysis. From the result of these cases, however, I fear that its practical usefulness is limited, and that many nævi can be more quickly and conveniently cured by other means. There is, from their very nature, this marked distinction between cirsoid aneurism and nævus in amenability to treatment—that, while in the former the blocking-up of main affluents leads to the extinction of the rest of the tumour; in the latter, occlusion of a veinule seems to have little influence on its neighbours. Nævi have this obstinate characteristic, whatever mode of treatment be adopted. If a portion be left out when the ligature is applied, its growth is accelerated rather than otherwise. When the subcutaneous part of the tumour is cut out, according to Mr. Jordan's recommendation, it would seem that the affected skin over it remains unchanged. Perchloride of iron must by its immediate presence produce a clot in each individual vessel before the cure is complete. In like manner, the electrolytic action must pervade the whole nævus, and act directly on almost every little vein. Now, electrolysis cauterizes the tissues as much as it coagulates the blood; and it is evident, accordingly, that when the skin is much affected a slough will be produced. Several of the cases are examples of this. The slough is tough and dry, excites little irritation, is singularly slow to separate, and does so without a drop of hemorrhage, even though part of the nævus remains. Galvanism is safe therefore and effectual; but if a cicatrix must be left, there is reason for preferring the ligature as more simple and speedy. The galvanic apparatus is cumbrous, and in most cases the operation requires frequent repetition. Still, if the skin be not greatly occupied by the enlarged vessels, sloughing may be avoided by a very cautious approach to the surface, and by using small needles and a weak current. In subcutaneous nævi, moreover, especially when they occur about the head and neck, galvano-puncture possesses many advantages. The injection of such astringents as perchloride of iron is both less safe and less certain; and excision necessarily leaves a scar, which electrolysis never does, if properly insulated needles be employed. Again, there is a class of nævi which lie beyond the reach of knife and ligature. Some months ago Mr. Spence asked my opinion in a case of nævus, which so occupied the hand of a child (a year old), that the fingers protruded from the mass like small roots from a turnip. He told me that his experience of injection in a similar case was such that he should prefer amputation. My opinion was that a cure could be brought about by galvanism, and probably without loss of skin. The result has amply justified the opinion. After two or three operations in the Infirmary, the patient was taken home to Peebles, where Dr. Connel so carefully and skilfully continued the treatment, that when the child returned, a few days ago, hardly a trace of the nævus remained. A few hard nodules occupied the palm, but the motions of the hand are perfect. The only accident had been a slight suppuration after one of the operations. There is also at present in the Infirmary, under Mr. Spence's care, a girl about nine years old, whose left cheek is wholly occupied by a large nævus, which extends over the parotid region and part of the neck. I have already aided in the performance of two operations which have hardened a large portion of the cheek, and I have no doubt that the treatment will be successful. It is a case of greater difficulty than the other, because, especially in the neck, the skin is traversed in many places by a network of vessels, large and small. The subcutaneous part of the nævus bears, however, a very large proportion to the tegumentary; and I think it likely that there will be no sloughing or consequent scar.

These two cases illustrate well the class of nævi for which galvanism is best suited. Indeed, its only drawback is that it demands considerable patience on the part both of surgeon and patient. In every other respect it is superior to injection, ligature, and excision. Mr. Teale, it is true, has recently advocated and put in practice excision of nævus of the parotid. But in the case I have described, the extent of the nævus plainly forbade such an attempt; and even had it been smaller, a treatment so easy and safe as galvano-puncture must be preferred to excision.

I have nothing to add to my former descriptions of the apparatus used. Other batteries may be more convenient than Bunsen's, but, having become familiar with its manipulation, I have not thought it worth while to change. The needles I formerly recommended have invariably been found to answer the purpose completely.

Before concluding, let me say one word on an objection to electrolysis, which has been made a good deal of by various recent writers—I mean the introduction of gas into the circulation. Professor Rutherford, in his able article on Electro-therapeutics, recommends that the positive pole be alone introduced, as its gaseous products are more easily absorbed, and it causes the firmer coagulation of blood. I might be inclined to follow his advice in a case where one needle only is required, if such a case may be met with. But had he observed the effect of a negative pole, as I did notably in the cirsoid aneurism, and had he remembered that that needle is much the more powerful cauterizing agent, I believe he would have modified his recommendation. It is useful not only in coagulating the blood, but also in shrivelling-up and destroying the coats of the vessels through which it passes. In such cases, therefore, I strongly advocate the introduction of both poles, for I hold that the presence of gas in the circulation is of very slight importance. Mr. Lawson Tait, indeed, says that he "assisted to kill" a patient with innominate aneurism by this means, but he gives no details, and he is the only man who has done so. I can well believe that in innominate aneurism, if the carotid have not been compressed, clots and froth and everything may have been whirled from the needles to the brain as quickly as they were formed, and that fatal embolism might result. But those who have read the researches, especially of French surgeons, into the causes of death by the introduction of air will see at once that this source of danger is not present in galvano-puncture. It has its dangers, which I believe render it not very suitable for aneurisms like the innominate, and these I have pointed out in a former paper; but for cirsoid aneurism, for some not amenable to compression, and probably for such as the gluteal and sciatic, it is an admirable mode of treatment, and I would hope that the cases I have related may in some measure determine its use in a certain class of nævi. It is hardly necessary to add, that the spontaneous disappearance of nævi is so frequent as to render the number suitable for any operation comparatively small.—*Edinburgh Medical Journal, March*, 1870, *p.* 777.

49.—CASE OF POPLITEAL ANEURISM TREATED BY COMPRESSION.

By Dr. Patrick Heron Watson, Surgeon to Royal Infirmary and Chalmers Hospital, Edinburgh.

[The patient was a man 30 years of age. He had a large aneurismal tumour, occupying the lower third of the inner side of the thigh.]

The tumour when examined presented all the characters of an aneurism. It extended from the lower border of the sartorious muscle as far as the middle of the popliteal space, and at its centre increased the circumference of the thigh by three inches. The whole limb below the tumour was venously engorged and swollen.

The swelling had only existed for six months, but the limb had been the site of painful rheumatic sensations for more than three years, the swelling first manifesting itself at the point where the pain had been most intense.

Friday, 24th Sept. The pulsation, thrill, and bruit, together with the pain, are all exaggerated; I accordingly shaved the surface, and commenced the compression by means of my own apparatus, applying the weight, for reasons I shall afterwards give, over the superficial femoral artery, just above the sartorius.

25th. The compression has been diligently superintended by my house-surgeon, Mr. Bentley, and continued till to-day at visit, *i. e.*, for twenty-four hours. Throughout all this period there had been neither pulsation, thrill, nor bruit discernible, and now the sac is firm and resistent. There is no pulsation in the superficial femoral, but a powerful pulse in the common femoral and profunda. The gum-plaster, which had been applied over the groin, is loosened, by the copious transpiration from the cutaneous surface, and came away whenever the weight was removed. The patient said, during the first six hours the pressure of the weight occasioned him great uneasiness, but that since then there had been no pain of any kind, except a sensation of burning in the tumour and inner side of the calf beneath this point.

The limb was wrapped in cotton and laid comfortably on pillows.

26th. There is slight pulsation recognisable in the most prominent part of the tumour, but there is no pulsation to be recognised in the superficial femoral.

27th. The aneurismal symptoms occupy the whole extent of the tumour.

28th. The superficial femoral is again pervious, and the aneurismal symptoms exactly as they were before the employment of the compression.

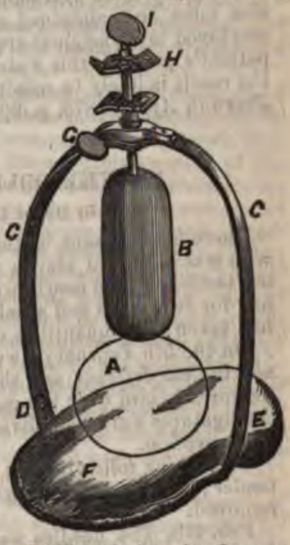
The groin was again shaved, and the whole of Scarpa's triangle and lower part of the belly on the right side having been thickly dusted with fuller's-earth, the weight was now adjusted so as to compress the *common* femoral artery, and, if required, the external iliac. Here it was retained under the surveillance of my house-surgeon and dressers for forty-eight hours without intermission, and without the slightest recognisable pulsation, thrill, or bruit. The patient had experienced no pain at the site of compression, but the same burning sensation in the sac and down the limb was experienced after the lapse of about six hours.

There has been no return of any aneurismal symptoms since the period when the compression was reapplied; the patient has, however, been retained in hospital to admit of the further progress of absorption of the coagulum taking place under constant supervision, as from the size of the sac the risk of suppuration was deemed a possible contingency. During the whole period while the compression was maintained, iodide of potassium, in drachm doses, was given three times a day, without inducing coryza or other signs of iodic intoxication.

This is now the third case in which I have employed compression successfully in the treatment of aneurism. The two former cases I have already detailed to the Society, and in the remarks I then made I said that, so far from compression being an inferior means to ligature in the treatment of aneurism, it might possibly prove more efficient than ligature, by affording the means of interrupting the arterial supply through the main trunk at a higher or lower point according to the exigencies of the case, instead of being confined to one point, as was necessarily the case in the use of the ligature. The present case appeared to me to afford an opportunity of putting this to the test of practice. When I first saw this case, I pointed out to the pupils attending the visit that, as the anastomotica magna was given off just about the middle of the sac, the effect of any means employed to check the free circulation through the sac, which acted only upon the superficial femoral artery, but did not restrain the circulation through the profunda femoris, was not likely to afford such an interruption to the circulation as would suffice to effect a permanent obliteration of the sac cavity. I therefore, in the first instance, confined the compression to the superficial femoral artery, and was agreeably surprised to find that consolidation did occur. It did not, however, become permanent; for within forty-eight hours the aneurismal symptoms became established, not in the first instance by the superficial femoral becoming again pervious, but by the collateral circulation through the anastomotica magna bringing the blood round to the middle of the sac with sufficient force to break up the recent clot. It is quite possible that, at this stage, had I supported the superficial femoral by compression, so as to prevent the coagulum in it becoming disturbed, these aneurismal symptoms might have abated, just as we see in cases where the ligature is applied, the circulation in the sac is first stilled, then reproduced, and then gradually becomes completely and permanently arrested; the great difference between the two conditions of ligature and compression consisting in the permanent obstruction of the afferent artery at the point of deligation in the former, which does not necessarily occur at the point of compression in the latter. There is, however, a sufficient number of cases upon record to prove, after the treatment by ligature, that the circulation through the sac may become re-established, and the aneurism show no tendency to undergo any definitive consolidation.

If such a result occurs after ligature of the superficial femoral, flexion of the limb, ligature of the external iliac, or compression of the common femoral have been the measures proposed, should bandaging of the limb, the application of cold, or graduated compression of the sac prove insufficient. But flexion of the limb, in such a case as the present, could exercise but little influence upon the sac, as the disease was too high up to be directly influenced by the pressure, and bulged too much to admit of such flexion as could be assumed materially to impede the flow of blood through the popliteal below the sac.

The patient could hardly regard a second operation practised upon his limb for aneurismal disease with much satisfaction after, and because of the failure of the first; while to employ compression as a curative agency after the failure of the ligature would scarcely redound to the credit of the ligature, or be likely to lead the surgeon, who fell back upon it in a time of need, to speak of the ligature or make use of it so confidently upon a future occasion. Having made my experiment, and observed as its result that mere compression of the superficial femoral, however absolute, is not sufficient to effect a permanent cure of the disease where the aneurism corresponds to the origin of the anastomotica magna; furthermore, the aneurismal symptoms being now again reproduced in their original condition and intensity, I resorted to compression of the common femoral above the origin of the profunda, and found not only that the pressure was better borne because almost painless, but effected a thorough and complete consolidation of the sac some time within forty-eight hours after it was applied. The compression was so unflinchingly borne and its application was so efficient in arresting all appreciable flow through the sac, that no aneurismal sign was observed, nor was there anything except the consolidated feeling of the sac, and the sensation of burning pain in the sac and leg, which could have indicated that all was silenced in the aneurism, till the withdrawal of the apparatus proved that it was really so. If we assume that the burning pain in the sac and limb beyond is pathognomonic of completed consolidation, then the compression was maintained for forty-two hours longer than was necessary, and these six hours formed the whole obligatory period during which it must needs have been maintained. The immunity from pain during this longer period indicates how easily, so far as the patient is concerned, pressure in this situation or a little higher up may be persistently maintained without the patience of either patient or attendants becoming exhausted. From what I have previously observed, I should expect the attendants to be more likely to give in than the patient; for while he may sleep, and generally does sleep, the watcher for the time being must be on the alert to prevent any movement of the limb or trunk from displacing the accuracy of the adjustment, and thus impairing the efficiency of the pressure upon the afferent trunk; for to compress the vessel leading to an aneurism efficiently the pressure must be sufficient to prevent the smallest wave of blood from passing beneath its control; it must, in other words, be *absolute*. If it is not, it is merely annoying the patient and losing time in obtaining a cure. How much time may thus be employed without effect is well shown in a case narrated by Mr. Digby Longfield, of the Royal Navy, in a recent number of the *Lancet*, where, after a month unavailingly expended in flexion, the use of Carter's compressor, Signormi's tourniquet, and digital compression, a brief application of the weight by means of a very inefficient machine *sufficed to attain a satisfactory* result.



Dr. Watson's Aneurism Compressor.—A, Imaginary outline of limb. B, 12 lb. weight. C C, Metal arc, hinged at E, and opening by a pivot nut at D. G, Pinch screw of universal joint (ball and socket). I H, Upper part of rod, gliding through ball and socket, supporting and guiding the pressure weight. F, Splint to which the arc is attached, and on which the limb is laid. This apparatus was constructed out of a Carter's apparatus, by elevating the arc, removing the elastic, and elongating the rod as a support for the channelled weight.

I have not been able to discover any means of applying the weight more satisfactorily than the apparatus I formerly exhibited to the Society, and which I have employed in all those cases.

It admits of easy and accurate adjustment. It can be easily made by any mechanician, however rude. It utilizes all the weight necessary to arrest the flow of blood, but acts simply by dead pressure, there being neither screw pressure nor elastic bands in its composition. It admits of the pressure being regulated by the inclination of the axis of the weight. The form of the weight admits of its being easily borne without galling or unnecessary diffusion. Lastly, its metallic resisting surface secures the parts against all softening by soakage, or loss of power after it is once applied by yielding.

It has but one objection, viz., that it is not intelligent, and needs watching; but that is an objection to all compressors hitherto invented, and one which is not likely to be overcome so long as patients are restless and the compression must be maintained absolutely and exactly. With a little intelligence employed in its original application to the part, and in the arrangement of the patient's posture, this watching is reduced to a minimum, and the success of the result is likely to attain its maximum of efficiency.—*Edinburgh Medical Journal*, *April*, 1870, *p*. 909.

50.—THE OBLITERATION OF VARICOSE VEINS.

By Henry Lee, Esq., Surgeon to St. George's Hospital.

There is at present in the hospital a man named R. C., æt. twenty-three, who was admitted eleven months ago, with varicocele of the left side. The left testis had then nearly wasted away, and the dilated veins were painful. He had for two years and a half been under the care of different medical men, and had taken large quantities of medicine without relief.

On the 5th February, two needles were passed between the enlarged veins and the *vas deferens*, and slight pressure was applied to the veins by means of ligatures passed over the ends of the needles. The veins thus compressed by the ligatures were then divided midway between the two needles, by subcutaneous section.

On the day following the operation, the testis of the affected side was very tender; the next day it was swollen; the ligatures over the needles were removed.

Feb. 9th. The needles were removed; the patient was quite easy and free from pain.

Feb. 10th. A considerable amount of thickening had taken place in the scrotum on the left side.

Feb. 14th. The left testis appeared about twice the size that it was when he was admitted.

He now left the hospital and went into the country. Upon his re-admission, eleven months after the operation, the veins which had then been obliterated had not again enlarged, but the left testicle had nearly regained its original and natural size. He had experienced no pain in the part since leaving the hospital, and had remained without inconvenience. Of late, however, he had been suffering some pain in the right testis; the veins on that side were somewhat enlarged, and the testis he believed had become smaller than formerly. Recognizing the symptoms, as he believed, with which the atrophy of the left testis commenced, he came to town of his own accord in order to ascertain whether the disease could be averted by the same means as had formerly been adopted on the left side.

I take the foregoing as the text of a lecture because it is one of a large number of cases of enlarged and varicose veins which have been operated upon in this hospital, and an opportunity is now afforded to all those who are interested in the subject, of observing the results of the operation nearly a year after it was performed.

My principal object, however, in recurring to the subject of varicose veins and their obliteration, is to review concisely the causes which have prevented an apparently very simple operation from having been as safely practised in former times as at present; and what I have now to say will apply equally to varicose veins of the leg or of the scrotum.

Sir Everard Home was at one time in the habit of applying a ligature to the *vena saphena major* in cases where the veins of the leg were varicose. In these operations the skin was divided, and a silver needle with ligature was passed under the vein, and the vessel was tied. It was erroneously supposed at that time, as I have already stated, that the lining membrane of a vein when irritated would secrete lymph, just as a serous membrane might, and that the opposite sides of the vessel would thus be glued together.

Mr. Travers, in his very valuable observations on wounds and ligatures of the veins, has expressed the idea generally prevalent in his day in the following words:—"The inner membranes of arteries and veins are susceptible of the adhesive inflammation. In veins the inflammation extends from the point irritated towards the heart. The lymph coats the vein like a fringe." The following account, taken from Mr. Travers' work, affords a description of the effects occasionally observed in his day after the operation of placing a ligature upon a vein:—

"I remember about the year 1801, when the operation of tying the saphena major vein was frequently practised for varicose ulcers of the legs, an elderly woman being the subject of this operation, which was performed in Guy's Hospital, a little above, and on the inner side of the knee. Inflammation of the vein followed, and several abscesses formed in the direction of the vessel, below the ligature, on the inner side of the calf of the leg. It was accompanied with great constitutional disorder; some of the abscesses ulcerated, others advanced with great difficulty to the surface, and the patient died, worn out by excessive irritation. In a second case, that of a man who had drunk hard, two ligatures were made upon the vein, and the vessel was divided between them. In three days the man complained of pain in the course of the vein from the place of its division to the groin: an inflammatory blush appeared upon the leg, extending from the knee to the ankle, and on the succeeding day considerable swelling. The pain above the ligature extended to the bottom of the belly, and the thigh became swollen and tender upon pressure; the constitution sympathised with the local disease, and without the formation of abscesses as in the former case. The man died, as it appeared, from extended inflammation of the vein."

Mr. Hodgson mentions two cases in which the division of the varicose vein terminated fatally; the first on the morning of the fourth day, the second on the seventh or eighth. The same author relates a case from the practice of Mr. Freer, of Birmingham, in which the ligature of a varicose vein was followed by pain in the chest, hurried and laborious breathing, and vomiting of blood four hours after the operation. which symptoms were immediately relieved by the removal of the ligature. The operation was followed by fever and vomiting, and retention of urine, when performed on another varicose vein of the same patient six weeks afterwards, although the ligature was removed immediately after its application; and again by similar symptoms of constitutional disorder, when repeated upon two other veins after an interval of nine weeks, the ligatures being cut away immediately after their application. The fever went further on the latter occasion; the patient was attacked with delirium and severe vomiting on the second day; the symptoms continued on the third and fourth days; on the sixth she was slightly delirious, and her respiration much oppressed. "In this case," says Mr. Hodgson, "the obliteration of the vein was the consequence of the application of a ligature which was immediately removed."

In the fifth volume of the *Edinburgh Medical and Surgical Journal*, Mr. Oldknow, surgeon of Nottingham, communicates the following important narrative:—

A young man, about twenty-three years of age, of plethoric habit, had been troubled for the last two or three years with painful ulcers about the inner ankle of the right leg, which repeatedly healed, and broke out again, so as to prevent, in a great measure, his attendance to business; he therefore became desirous, on my representation, of having the saphena vein tied, it being varicose to within a hand's-breadth of the knee. The operation was performed in the following manner. An incision, three quarters of an inch long, and about one inch and a-half above the distension, was made through the skin, immediately over the vein, and in the direction of its course. The cellular substance was then carefully divided, the vein lying deeper than usual, until its upper surface was completely exposed. A probe armed with a double ligature was passed under the vein, taking care to include nothing with it, it being clearly dissected from the surrounding cellular membrane upwards and downwards as far as the extent of the first incision, and then tied. The portion of the vein between the two ligatures being afterwards cut out, the lips of the wound were brought together by a suture and adhesive plaster, with a view of healing it by the first intention. The patient was then put to bed, and directed to use a cold embrocation. On the second day he took some opening mixture. Third day, the wound was dressed, and appeared wholly united, except when the ligatures came out. The suture was cut out, and a fresh adhesive plaster applied. On this day he complained of pain in the lower part of the limb, that is, from the lowermost ligature, along the vein down the foot, to use his own expression, as if the blood in the veins were endeavouring to overcome the obstruction caused by the ligature. This sensation was, however, entirely removed by applying a bandage moderately tight, from the toes upwards. On the fifth day there appeared a little erythematous blush about the wound. He had a trifling epistaxis, and I thought proper to take from him sixteen ounces of blood which was not inflamed; the purging mixture was repeated. Sixth day complained of a little pain on the inner side of the knee, in the course of the vein; but there was no external inflammation at that part. The lips of the wound began to separate. In the evening he was suddenly seized with a violent rigor, succeeded by a hot fit, and symptoms of great vascular action, and some tendency to delirium. Pulse 130; hard and full, therefore sixteen ounces of blood were taken from the arm; it gave instantaneous relief, and was followed by the sweating stage, which continued several hours, and was succeeded by a state of quietude, soon, however, interrupted by a recurrence of the same train of violent symptoms, at first about once in twenty-four hours, but gradually increasing in frequency, and diminishing in strength, till nature became exhausted; death closing the scene twenty-two days from the operation.

For the first four or five days after the rigor, the wound discharged pretty freely, and by making strong pressure about the knee, a little matter was forced from it. The inflammation crept gradually up the vein, which was evident from its peculiar cord-like feel, and from giving pain on pressure, until it reached the groin, the inferior part getting well as the superior became bad, so that the wound was nearly healed before death, the ligatures having separated about the fourth day. There was no tumefaction of the cellular membrane, no enlargement of the glands in the groin, no superficial inflammation on the thigh. There was, it is true, a slight redness of the skin when the poultice was removed (for the thigh along the course of the vein, was covered with cold poultice), which entirely vanished on exposure to the air. The medical treatment was strictly antiphlogistic; the patient was repeatedly bled, and with apparent relief every time. Two days, however, previous to his death the vital principle was so exhausted as to need the use of cordials.

Mr. Abernethy believed that it was the ligature that produced the inflammation of the veins in the cases in which such serious mischief followed, and he recommended that the vein should be divided instead of being tied.

Sir Benjamin Brodie adopted Mr. Abernethy's suggestion, and instead of tying the *vena saphena*, cut it across, and applied a compress and bandage. The patient had venous inflammation, attended with very severe typhoid symptoms, and died within four days after the operation. Now, in all the cases to which I have alluded, the interior of the divided veins was closed by *fibrine* only, deposited from the blood. Such a bond of union is constantly *liable to give* away, and the contents of the veins are then carried into the general circulation. Coagula in veins are in this way, as I have already explained, very readily removed, and if formed from healthy blood, they often appear to produce very little inconvenience to the system. But if these coagula have already begun to undergo morbid changes, if they have already become mixed with other secretions in their neighbourhood, then the most severe symptoms of blood poisoning may be produced. When a vein is simply divided, a certain amount of hemorrhage necessarily follows, and the blood thus effused may undergo morbid alterations, as it lies at the open mouth of the vessel, and these same diseased actions may be readily communicated to the blood still within the vein, and be thus propagated to every part of the body.

The operation of tying a vein affords no security against such accidents; for in accordance with an observation made by Sir Benjamin Brodie, as the ductus choledochus, or the intestinal canal, will heal after the application of a ligature, without *the continuity of the canal being destroyed*, so it appears to be with divided veins under certain circumstances. Whenever the circulation through a vein is thus restored, the coagula of fibrine which temporarily obstructed its canal are, sooner or later, carried into the general circulation.

It appears to us strange, in the present day, that so many centuries had elapsed before a simple mode of securing a bleeding artery was discovered; and it appears almost equally strange that, although surgeons of the highest intellect in the present generation have, in successive years, given their attention to the best mode of operating upon varicose veins, no method should have been adopted by them for effectually closing the vessels during and after the operation. As in former times the actual cautery was used for the purpose of arresting hemorrhage, so are there still in modern surgery those who prefer the actual cautery or some form of caustic, to the simple mode of closing a vein which I have described in a previous lecture. There has very recently been in this hospital a young woman who had had, I believe, upwards of a dozen sloughs made on her by the actual cautery, and in a recent number of the *Lancet* the same mode of treatment is advocated by a distinguished surgeon attached to one of our metropolitan hospitals.

Sir Benjamin Brodie some years ago applied the caustic potash over clusters of smaller veins, in order to produce their obliteration, and Mr. Mayo subsequently adopted the same treatment for varicose veins of a larger size. Sir Benjamin Brodie has left us the result of his experience in the following words: —"The application was very painful; the slough took a long time to separate; the sore took a long time to heal, and altogether it was a very tedious process."—*Medical Press and Circular, Dec.* 15, 1869, *p.* 471.

ALIMENTARY CANAL.

51.—THE USE OF OPIUM IN STRANGULATED HERNIA.

(Case under the care of Mr. MAUNDER, at the London Hospital.)

In a recent case of strangulated hernia, where the effect of a single subcutaneous injection of half a grain of morphia had been very marked, Mr. Maunder took the opportunity of pointing out the danger that might result from the use of opium in such cases. "This drug should never be administered," he said, "to a patient the subject of strangulation, unless the surgeon has determined to resort to operative interference for the relief of the latter within the space of from three to four hours subsequently, provided that the taxis, aided by chloroform, &c., fails to effect reduction. In the case alluded to the patient had vomited up to the moment of the administration of the drug; abdominal pain and tenderness in the neck of the tumour ceased after its use, the stomach retained half a basin of beef-tea, and the patient felt 'quite relieved.' But strangulation persisted, as was known by the unaltered condition of the tumour, and by the absence of expansive impulse on coughing. In this way the soothing effect of the drug might ultimately lead to the death of the patient, unless the medical attendant fully understood that during this apparent improvement serious pathological changes were occurring in the contents of the hernial sac." With regard to the seat of stricture in femoral hernia, while operating on another case, Mr. Maunder remarked that, although in very many cases Gimbernat's ligament was its source, yet sometimes, as in this instance, some tight fibres on a deeper plane were the cause. He accordingly advised care in the use of the knife, lest this structure be unnecessarily cut, and the crural ring be thereby enlarged. To avoid this error, if the director be passed between the ligament and the neck of the sac, and can then be moved somewhat from side to side, the ligament is not the seat of stricture, and must not be cut; but it must be looked for either in some deeper fibrous bands or in the sac itself. In reference to chloroform as an aid to taxis, Mr. Maunder had observed that reduction was often effected just when the breathing became stertorous, in cases where similar means without chloroform had failed.—*Lancet, Feb.* 26, 1870, *p.* 301.

52.—A NEW METHOD OF APPLYING INTESTINAL SUTURES.

[The inventor of the following proceeding is Dr. Béranger-Féraud, of Paris, chief physician to the French navy.]

The necessary materials consist of eight or ten ordinary pins nine millimetres in length, two corks, and a piece of sealing-wax. The way in which this simple apparatus is prepared is as follows. Each cork is cut out in the form of a quadrangular prism, about six millimetres on each side, and of the length of the intestinal wound. Four or five pins are driven into each of these prisms, which they traverse so that the points issue at the opposite surface, whilst the heads are brought down close to the cork. The heads are then embedded in a coating of sealing-wax, and the whole presents the appearance of two little combs. (See Fig. 1.) These combs are then employed in the following manner. The body of the cork prism being in contact with the mucous surface, the points of the pins are made to traverse the intestinal wall from within outwards, at a distance of one or two millimetres from the lip of the wound. When they have all traversed the tissues, the two prisms are turned so that the points of the pins correspond; and then, on exerting upon them, through the intestinal wall, a slight pressure between the thumb and the index finger, the pins of the right prism are made to penetrate the left prism, and *vice versâ*. The intestinal wound is thus exactly united, so that no foreign body can appear at the peritoneal surface, and the intestine may then be left at rest in the abdomen.

Fig. 1.

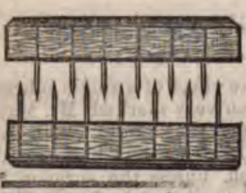


Fig. 2.

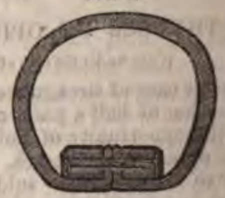


Fig. 2 represents a schematic section, which shows that the two prisms when united form a small oblong body without any outer roughness, and of a size to allow the free circulation of intestinal matter. A few days after the operation, when the circulation of the intestinal wound is complete, the portion of the tissue traversed by the pins detaches itself, the cork falls into the intestine, and is carried out with the fæcal matter. The cork being dry at the moment when it is introduced into the intestine, it results that the humidity to which it is subjected afterwards causes it to swell around the pins, and thus increases the solidity of union. But if any fear is entertained lest the movements of the intestine should bring about the separation of the two pieces of cork, it is easy to introduce into each prism a curved pin of which the head has been previously cut off; and when once the intestinal wound has been closed, by pressing slightly between the thumb and index-finger through the intestinal wound, a union would be obtained which nothing could destroy in the bowel. But this last precaution is believed to be altogether superfluous.

If the intestinal wound is very extensive, two or more of the prisms which have been described may be placed end to end. The present proceeding is especially indicated for oblique and longitudinal wounds, but may also be applied to transverse wounds. In this case the prisms should be shorter, so that it would take six of them to occupy the entire circumference of the tube. They should first be placed in position separately upon each intestinal segment, and their union effected afterwards.—*Lancet*, *Feb.* 12, 1870, *p.* 234.

53.—NEW CLAMP FOR HÆMORRHOIDS.

Mr. Sydney Jones, feeling how unequally the clamps in present use press on all parts of the pile to be renewed, has devised an instrument in which the bars act in a perfectly parallel direction. This parallel action of the blades is effected by placing the joint-screw at right angles to the blades. A scooping action is at the same time secured, so that the deepest part of the pile is seized and drawn forwards. On the upper surface the blades are sloped, so as to make their line of closure project beyond the general level. By this arrangement the removal of the pile by scissors can be more readily effected. The rack and screw for fixing the handles play very easily: the rack is curved, and, instead of being fixed, has vertical and horizontal movements. Of course, in the use of this clamp the ordinary curved scissors would not have availed; their shape has been modified to adapt them to the curve of the clamp. The principle has been admirably carried out by Messrs. Schmidt and Robinson, of 267, Strand.—*Medical Times and Gazette*, *Dec.* 4, 1869, *p.* 671.

ORGANS OF URINE AND GENERATION.

54.—ON LITHOTRITY.

By Dr. RICHARD G. BUTCHER, University Lecturer on Operative Surgery, &c., Dublin.

[Dr. Butcher relates seven interesting cases on this subject, and then says:]

In the management of the foregoing cases, I have laid great stress upon the gentleness with which the lithotrite was introduced into the bladder in every instance. The practitioner must never lose sight of the fact, that it is a widely different thing to pass a straight instrument into the bladder, and making the urethra straight for the instrument, a proceeding which never can be accomplished, owing to the manner in which the membraneous portion is tied up to the pubis by ligaments before and behind, and strong reflections of fascia which render it and the prostatic portion of the canal permanently concave to the bladder. The lithotrite, warmed and oiled, should be passed down to the opening in the triangular ligament, and then the handle of the instrument depressed well between the thighs with a gentle onward movement, when it glides without opposition into the bladder, thus representing in its introduction a lever of the first order. The instrument once in the bladder must be handled with the greatest lightness, and carried to the superior fundus and back part of the bladder, when most likely it will touch the stone; then in withdrawing the male blade the calculus very often falls into the lithotrite. If it should not do so I would say, on the surgeon touching the stone he can easily determine on which side of the instrument the calculus rests; then he should turn the instrument gently to the opposite side, open the blades, *and so opened throw it over* the stone to the other side, and thus *on closing the instrument he will find*, most likely, the calculus has been caught; if not, or if any doubt as to the relationship of the stone and instrument exists, the operator should again open the blades of the instrument and cast it to the opposite side over the stone, and then probably he will be more fortunate in securing the foreign body. However, generally speaking, the slightest lateral movement of its blades will determine on which side the stone lies. In this quiet way *the instrument may be applied to the stone in the happiest manner.* Again, as reported in many of the foregoing cases, the lithotrite on entering the bladder, was for a moment held quietly, and the instrument steadily, while the male blade of the instrument was insidiously introduced so as to traverse the lower part of the bladder, the centre of the the bladder, and the space beneath. After the stone fell into the jaws of the instrument it was secured and rapidly crushed. There is a movement which I have practised in one or more of the foregoing cases with the lithotrite, and which I have also alluded to in using the forceps in lithotomy as a means of securing a grip of the stone, adverted to by Sir B. Brodie. I shall quote his own words. If on the introduction of the lithotrite within to the lower and back part of the bladder, and on the separation of its blades, the stone does not fall into the lithotrite, "the forceps, without being moved from its situation, may be gently struck with the hand on one side, or on its anterior part, and the slight concussion thus communicated to the bladder, will probably be sufficient to dislodge the calculus and bring it within the grasp of the instrument. If it should be otherwise, the forceps being closed may be very gently and cautiously turned to one side or the other, so that the curved extremity of it may make an angle of 25° or even 30° with the vertical line of the body, then opened and passed in the direction of the rectum, in the manner already described."—(*Med.-Chir. Transactions*, vol. xxxviii., p. 174.) The chief advantages of this proceeding is to place the instrument in a position presumed to be advantageous, *and to bring the stone to the instrument.*

On the perusal of the foregoing cases it will be perceived that I do not approve, after crushing the stone, of working away in extracting the fragments; if the urethra is free, and in that condition which would warrant lithotrity, the fragments must be left for expulsion by the contractile force of the bladder itself; it may be said the bladder in its deranged state, so contracted, so irritated, cannot expel the detritus; if the bladder is in this state I would say cut the patient; if the bladder is in this condition that it has no power in expelling its contents, and so the broken up fragments, surely the most sceptical must admit, it is in no state to admit with impunity, without seriously resenting the irritability and violence created by the oft-repeated introduction of lithotrite, or catheter for the suction bottle, to mechanically extract those portions of stone recently broken up. When the bladder is inflamed, even secreting pus, absolutely on the verge of ulceration in some patches, how can it be credited that this practice can prove salutary? No doubt, in some instances, cases seen early before all the serious consequences of stone in its advanced stage are set up, the calculus may be broken up into fine fragments, and extracted piecemeal, with good instruments and a steady hand, without much pain and with little or no harm to the patient; and yet his urethral membrane may be torn, as I have seen by this quick method, and extravasation of urine occur, and I doubt not that this method may lay the foundation for permanent stricture of the urethra. I must emphatically say I do not sanction this method in even any of the cases that will bear it; but the large mass of cases of stone in the bladder in the adult and old, will not permit such obtrusive meddling. The irritability is so great, the changed tissues of the parts by disease are rendered so sensitive, that the surgeon will be fortunate if even, after preparatory sedative and soothing means, he can get an exploring instrument, sound, or lithotrite into the bladder; and when fortunate in doing so and making himself accurately acquainted with the nature of the case, he is glad to pause, and consider the most suitable way of removing the foreign body. If the urethra is sound, though all this terrible anxiety about the bladder, he may *and possibly* will decide on crushing the stone, gently using the instrument for a few applications to it; first in its primitive size, and two or three times after to its larger fragments, and then leaving them to be cast out by the efforts of the bladder in expelling the urine; and it is very remarkable, at least so I have constantly observed, when, after the stone had been well and carefully broken up, how soon the terrible excitability subsides, the sharp edges of the broken pieces are soon smoothed down, and on the second or third day large quantities of detritus are expelled, though for the two former days scarcely a fragment had come away. The irritability being subdued and the muscular tone of the bladder developed, a larger quantity of water is retained, and a greater expulsive power is restored, and so the fragments now begin to pass with the larger and more certain continued stream.

However fortunate the surgeon may be in crushing the stone in properly selected cases, yet there are others, as I have before adverted to, where the knife offers a far better chance of success. When, for instance, the case is of a long standing, with the vesical symptoms greatly aggravated, the bladder contracted, with its mucous membrane highly inflamed and even secreting pus, when the prostate is enlarged and the "*bas fond*" of the bladder deep, always holding in it a quantity of fetid ammoniacal urine and pus, when the urethra is hard and rugged, and spoiled in its natural structure from repeated attacks of inflammation and venereal excesses. In these cases a direct passage into the bladder by the lateral method of lithotomy is the correct mode of proceeding. In a few seconds the stone is taken out, the source of irritation removed, the fetid contents of the bladder has a ready outlet. I have no fear of dividing the enlarged prostate; if moderately done, it will in most cases then yield to force, sufficiently for the purpose of extracting the stone without passing beyond the fascial covering of the gland. I admit in some instances, the prostate is very firm and rigid, and will not tear, then the surgeon should pass the index finger of his left hand into the opening, and on it convey down the blunt pointed knife and divide the rigid parts. Sooner than cut extensively I prefer breaking the stone than extracting it in pieces through the wound, and then washing out the bladder. If the opening through the prostate be carefully executed by limited section and forcible dilatation or rather tearing, there need not be much apprehension of serious bleeding from the prostatic plexus of veins or vessels.—*Dublin Quarterly Journal, Feb.*, 1870, *p.* 44.

55.—ON LITHOTOMY IN THE INFANT.

By Dr. Richard G. Butcher, University Lecturer on Operative Surgery, &c., Dublin.

[A child was admitted into Sir Patrick Dun's Hospital under Mr. Butcher's care, suffering from stone in the bladder. The symptoms had existed for nearly a year.]

The operation was performed after the following manner, October 20, 1869, at 10 o'clock a.m. Early in the morning a little warm water was thrown into the rectum, so as to empty the bowel, and the urine was retained in the bladder for two hours previous to the above time. The child was placed upon the operating table, and brought under the influence of chloroform. I then passed the staff and struck the stone. Compression was made upon the penis to prevent the water flowing off. Each hand and ankle were then bound together, and the patient brought down to the end of the operating table, upon which the buttocks steadily rested, immediately sustained by a blanket, covered with a sheet neatly turned in, on a line with the edge of the table, and secured by a couple of laps of bandage to prevent slipping. In the act of tying up the child the rectum discharged its contents, and slightly prolapsed; the part was cleaned and the gut restored. I may here add, it is a custom of mine immediately before applying the knife, both in the old and young, to introduce my finger into the rectum, and thus solicit the evacuation of any fluids or solids which may be there, and so secure the safety of the bowel. The staff was taken by an assistant standing on the left side of the patient, and held well up to the pubis; an assistant on either side separated the limbs, and held them wide apart, the sole of each foot resting firmly on the table, so as to insure the proper axis of the pelvis. Bringing myself to a convenient height by going down upon the right knee, feeling diligently with the index finger of the left hand, the staff could be discovered traversing the membranous portion of the urethra, I then laid the knife on, about three-quarters of an inch in front of the rectum, probably a line or two less, and immediately to the left of the raphe, carrying it with a determined weight backwards and outwards for fully an inch and a half, midway between the anus and ischium, but nearer to the former, thus dividing skin, superficial fascia, and much fat. Again the knife was carried to the front of the wound, and struck at once into the groove of the staff, at the anterior part of the membranous portion of the urethra, the instrument was moved gently from side to side, to make certain it was fairly lodged, then slightly lateralized, and passed, backwards and upwards, dividing the membranous portion of the urethra. The point of the knife was then, as it were, brought away from the groove of the staff, its blade holding the same amount of lateralization, and made to cut its way from this deep position backwards and outwards, accurately in the line and axis of the first incision to its posterior extremity. The sharp-pointed knife was then laid aside, and the narrow blunt-pointed instrument substituted, to complete the careful and accurate section of the prostatic portion of the urethra. The staff being rigidly maintained in the same position, there was no difficulty in inserting the blunt-pointed knife in its groove; a double movement and concentration of action was now brought into requisition. The blunt-pointed knife was held up well to the groove in the staff, while the index finger of my left hand lay in the acute angle between its back and the groove in the staff, and thus the knife was pushed backwards and upwards, dividing the rudimentary prostate and neck of the bladder, the finger and knife went into the bladder together—some of the water gushed out, but some was retained by my finger blocking the opening—the staff was withdrawn, and the knife laid aside. I next introduced the gorget, its concave surface resting partly on the side and back of my finger nearly to the tip, then with half a turn it glided into the bladder, when my finger was withdrawn, and the forceps with its closed blades, and in its narrowed axis, passed along it, the hand of the operator being in the prone position; the gorget was then laid aside, and I raised myself from the kneeling position; the instrument was rotated by half a turn, the hand being made supine. The stone, though felt, could not be readily seized, owing to the size of the instrument; a smaller one was passed in after a similar manner to the first, and on opening its blades and striking it gently the stone fell into the chops of the forceps, and was readily extracted by an up and down movement of the instrument as it rested upon the index finger of my left hand acting as a fulcrum beneath. By these combined and gentle movements the stone was extracted with the least possible force, and with comparatively little violence to the wounded parts. The stone was composed of lithic acid, and about the size of a small walnut. Finally the finger was passed into the bladder and swept all round it, to make certain that no second stone was there. The patient was next unbound, and the *canule à chemise*, well oiled, introduced into the bladder, and retained by suitable tapes. He was then laid on his back in bed, a folded blanket under him, his knees tied together, with a small soft pad between, and the thighs slightly flexed, by a pillow placed beneath the hams; thus the wound was protected from pressure, and a ready escape afforded for the water from the bladder. Quickly the child awakened from the chloroform, and was quite unconscious of what had been done.

[The wound was healed, and the patient perfectly restored to health by the 18th of November.]

I have laid particular stress upon the various steps of the operation, as I advocate its performance, yet there are some points which I wish to repeat and dwell upon. The sounding of the patient in the first instance requires a few words. It should be ascertained whether the child had passed water *recently*; if not, all is well; but if so, the child should be placed recumbent, *brought under the* influence of chloroform, and then two to four ounces (according to age) of tepid water injected. The little sound should be then warmed, oiled, and gently, lightly passed into the bladder. To facilitate this result, the instrument should not fill the urethra, but glide easily along it; but other advantages flow from the instrument not being retained tightly in its route; its point can be elevated, depressed, moved to either side—in short, made to explore the bladder with freedom, and with a certainty that never can be obtained if the urethral grip be close, biting, and constricted. The instrument most effective in detecting the stone is one somewhat short in the sweep, and with rather a short curve; so constructed, it can readily be moved in all directions with accuracy and precision. When the presumptive symptoms of stone are present, and strongly marked, the surgeon should be tenacious of his opinion, and not lightly put aside the case because he has failed on one or two occasions in finding the stone. No; the child should be placed in bed, all irritation subdued by tepid baths and suitable medicine; and after a few days the examination may again be made, both in the recumbent and upright position, the bladder being, of course, in a state of repletion. If the stone be not detected while the patient is lying down, then a hollow silver instrument should be passed, and the position changed to that of standing up; the urine should then be permitted to flow slowly off, and very probably the calculus will strike the instrument, and give satisfactory evidence of its presence. I have laid stress upon passing the staff before the patient is tied up, and for these reasons:—In the first place, it is easier to do so, and safer, when the limbs are relaxed; and secondly, any unexpected difficulty may unsteady the hand of the unpractised operator. The educated touch of the trained surgeon may reject this advice, but I would caution the young surgeon not to do so, for too much force may be communicated to the staff, and if so, it may very readily be passed through the upper wall of the urethra in front of the bladder, or, again, very readily behind that viscus, between it and the rectum. The tissues comprising the urethra at this tender age are so feeble in their cohesion that they will readily yield to violence; and, again, the angle to the bladder, at this period of life, is so acute that greater facility is afforded to the instrument in going astray. It is well that a couple of ounces of water should be retained in the bladder previous to the staff being introduced; it facilitates the detection of the stone; and the stone should invariably be struck previous to cutting the patient—not only because the stone, if a very small one, might have escaped from the bladder, but because this evidence not only proclaims the presence of the stone, but also *that the guide to it is direct and certain, the instrument has not gone astray*. Now as to the form of the staff: It is essential that, beyond its curve, it should be of considerable length, otherwise, when fairly held up to the pubes, there will not be a sufficiency of it in the bladder, owing to the long neck and pelvic position of the organ. As to the arrangement of the groove in the staff, it should begin well in front of the commencement of the curve, on its convex surface, so as to be at its full depth, where the surgeon strikes for it at the beginning of the membranous portion of the urethra. I prefer the groove on the convex surface of the instrument to that on the side, subjected to this modification, *that one side be a little lower than the other, so that when the instrument is introduced, the side next to the right hand of the operator be a little less than a line lower than the opposite edge of the groove, which condition should maintain to within three-quarters of an inch of the end of the instrument, when it should gradually come up to a level with the opposite side;* such an elevation guards against any slipping of the knife when within the bladder. This arrangement facilitates the lateralization of the knife to the required extent, without changing the staff from its proper position, held up to the arch of the pubes, and it is in direct opposition to that reprehensible practice of trying to rest the staff upon the stone, and partially turning the groove to the incised side, so as to leave the operator to it; this latter manœuvre greatly endangers the rectum; it also facilitates the slipping of the knife, and its wandering away from the director; and it may readily entail more extensive division of the neck of the bladder posteriorly than requisite, or at all safe. One word more with regard to the way in which the staff should be held—it is a word of caution to the assistant, that in his anxiety to see the wound, and the steps of the operation, he should not bend over the patient, and so depress his hand, thus changing altogether the position of the staff, and bringing the extremity of its curve out of the bladder. If so, unfortunately, the knife falls short of it, and the operator may fail in reaching the viscus, and even not be able to rectify the error into which he has been led, so I would warn the surgeon, before he completes his last incision, to look well to the position of the staff.

Now, as to the first incision, there is no use in beginning it too far forwards, for no additional space can be obtained by doing so for the extraction of the stone. The close proximity of the osseous walls on either side prohibit such a sequence; but the incision should go well back, and nearer to the rectum than the ischium, and considerably beyond the former. By so doing commensurate space is secured for the travel of the stone, and a direct outlet is provided for the dribbling of urine from the bladder.

Next comes the important step of opening the urethra. The knife should enter and strike the staff at the commencement of the membranous portion of the urethra; the index finger of the left hand will discover the instrument and the part, and the scalpel should penetrate a couple of lines behind the first incision. The knife being lodged in the staff it should be moved quietly from side to side so as to make certain of its presence there; the instrument should then be slightly lateralized, as admitted by the construction of the staff, and so pressed steadily backwards, dividing the membranous portion of the urethra, even to the rudimentary prostate and neck of the bladder; the hand should then be depressed, of course, bringing down the knife with it, and so the instrument withdrawn, thus dividing the intervening parts from the termination of the membranous portion of the urethra to the posterior extremity of the first incision, creating a great triangular gap; the apex at the prostate, the base at the perineum, direct throughout.

I cannot lay too much stress on the necessity of freely opening the entire of the membranous portion of the urethra by the one and continuous stroke of the knife. This should be the surgeon's aim, for if the knife be introduced again and again with the intention of clearing the staff, the difficulties of completing the operation are greatly increased; the urethra is wounded and notched in several parts; shreds of it may hang into the groove of the staff, and impediments so offered to the blunt-pointed knife, so that it cannot travel freely or with security to the division of the prostate and neck of the bladder. But graver consequences may still follow this imperfect division of the membranous portion of the urethra. It may be so injured by the repeated wounds that the remaining connecting tissues may fail to resist the efforts essential to the completion of the operation, and give way, and so the surgeon may thus be foiled in reaching the bladder. The membranous portion being fairly divided throughout, the blunt-pointed bistoury is to be introduced into the groove of the staff, and immediately the index finger of the left hand into the angle between it and the staff. The right hand presses the blunt point firmly to the staff, and at the same time onwards towards the bladder. While the index finger of the left hand is in contact with and pressing it in the same direction, both arrive at the rudimentary prostate, the onward movement being still continued, the back of the knife resting in the pulp of the finger, the sharp projecting edge slightly lateralized makes sufficient division, and both enter the neck of the bladder. The wrist of the right hand now is slightly lowered, and pressure downwards and to the left side gently made, with the point of the finger resting on the bistoury to the extent deemed necessary. The blunt knife and the finger being within the neck of the bladder, the blunt instrument may be laid aside; and now, and not until now, can the staff be taken out with safety. Upon the finger is then introduced the blunt gorget in the manner already described, and upon it the forceps. It is much safer, in the young or old, to conduct the forceps by the gorget to its destination than upon the finger; first, because it will travel through a smaller space; secondly, and most important, the liability of the instrument's slipping aside and *unnecessarily* separating parts, even to the passing between the bladder and rectum, is done away with and guarded against. The forceps passed along the finger seems more showy to lookers-on; but greater security is insured to the patient by conducting the instrument through the hollow of the gorget; therefore the latter must be received and considered most practical.

I have depicted [vide *Dublin Quarterly Journal* for illustrations] the sharp knife which I use for the external incision, and likewise the blunt-pointed instrument for the division of the prostate and neck of the bladder. Both are represented in their form and shape for children. The sharp knife is very slightly, in the least possible degree, cut off at its point so as to make it glide along the staff more evenly. A word with regard to the formation of the blunt instrument. It should be long and narrow in its blade, quite straight, not curved like Cooper's hernia knife. I have had it constructed for myself, *with the point blunted for the eighth of an inch*, not more, not as Cooper's hernia knife, for half an inch at least. I lay great stress upon this point, because I have found, when the knife was blunted too far from the point, in gliding along the staff, *the hinder portion of the blunt part being out of the groove, hitched against parts that required to be divided, and so created difficulty in keeping the instrument in its proper track,and sometimes even tilted it from its position;* therefore I always use the instrument with little more than a button point, about the eighth of an inch long; and the cutting edge need not be so extensive as figured in Cooper's bistoury. The form of the knife I prefer and use is accurately represented. The gorget, made of steel, should be slightly hollowed, not wider than the index finger, or even so wide, somewhat longer, and slightly tapering towards its extremity, its edges nicely rounded off, and its handle of the same metal, set at an obtuse angle with the shaft.

The forceps being within the bladder, the gorget or forceps director may now be taken away, and search made for the stone. Every effort should be made to seize or secure it in the most favourable axis, and the index finger of the left hand should be brought into requisition to assist this project, as illustrated in the case which I have described. When the calculus is caught, too much pressure should not be exerted upon it lest it may be broken up into fragments, a result not to be desired in ordinary cases. To prohibit such a consequence a little slide may rest upon one of the handles, and when the stone is caught it may be passed down, and so prevent any closer approximation of the blades; I have forceps so constructed by Savigny. In the delivery of the stone the index finger of the left hand should be always used as a fulcrum upon which to lever the forceps, and so materially facilitate its extraction, and, that too, with the least possible amount of contusion and injury. Such can be accomplished, even though the stone be large. The advantages of this mode of practice is adverted to in several of the cases which I have recorded in my work on "Operative Surgery," and clearly in the case which I have just recited recently operated upon.

As to the form of the forceps it should be long and narrow in its blades, each blade very gently curved and rounded off at its margins, roughened on the inside to secure their grip, and they should be firmly riveted together, so as to prevent, by pressure through the leverage of the long handles, the approximation of the long blades, a casualty which would endanger the coats of the bladder. Curved forceps may also be at hand, but they will seldom be required at this period of life. The *canule à chemise* I have had represented of its full size, for the young subject, and so it should be prepared for use. The slight circumferential groove in the outer plate of the canula, commencing half an inch above the aperture in its extremity, permits the fine linen to be fastened there in its position, with very little increase of bulk or volume. The tapes connected to the opposite end effectually retain the instrument in the bladder, when attached to a band, which should be made firm around the patient's loins; the tapes ought likewise to be carried beneath and around each thigh, and then tied. Care must be taken that the instrument is not thrust in too far; *its extremity should only rest within the neck of the bladder*, and then no uneasiness can be occasioned by its presence, and all its salutary influence may be obtained. The foregoing case marks plainly its time for removal.—*Dublin Quarterly Journal, Feb.*, 1870, p. 1.

56.—ON LITHOTOMY, AND ON CERTAIN CASES OF ENLARGED PROSTATE.

By Sir William Fergusson, Bart., F. R. S., Serjeant-Surgeon to the Queen.

[There are several statements made and questions raised by writers on lithotomy which are either untrue or unnecessary. This arises from those who have least experience in the operation, writing the most upon it. For instance, the infiltration of urine alleged to be so common has no real existence, it is so rare that Sir W. has never yet seen an instance of it. Again, the question as to the exact size of the prostate in adult life with a view to limitation of the incisions, sinks into insignificance when we remember the comparative rarity of an operation for stone at this period of life.]

Although most formidable cases of stone are often met with in old age without any marked enlargement or change in the prostate, it frequently happens that the lithotomist finds the gland enlarged, and in the ordinary lateral operation his knife, finger, and instruments, pass through the part where enlargement is almost invariably greatest—viz., the lateral lobe. In the normal state of the prostate, the firm fibrous structure, as usually seen by the anatomist, can be readily appreciated. Even when there is enlargement, the firm fibrous character may still seem predominant. But in many instances, as the forefinger passes towards the bladder, the sensation is as if its point glided through several rounded bodies in the substance of the gland, which are but slenderly in contact with each other. It is seldom that the pathologist takes this route in examining or displaying the gland, and so perhaps little has been said about this condition. For my own part, although, like others, familiar with the condition, I had never heard any reference to it in association with lithotomy, and it was not until I had some considerable experience in this operation that I perceived the great importance of the fortuitous combination. Repeatedly I had been conscious, during a succession of operations, of feeling, and often, too, of seeing, this condition. The feeling may be easily understood, but seeing can only be appreciated after explanation. When the stone is being extracted, within the grasp of the forceps, there is often considerable resistance, even when the knife and forefinger have been freely used to give ready passage to and from the bladder. In some instances the stone, whilst all but through the wound, seems to be held *in situ*. If at this time the operator looks carefully, particularly on pushing the skin and margin of the wound a little aside, he will see some tissue or substance between the blades in the space between the hinge and stone. With a slight pressure of the point of the finger this object will disappear from between the blades, and extraction will then seem comparatively easy. This is in reality one or more of the lobules referred to. It has not been grasped between the blades in seizing the stone, but has slipped into the space as the forceps and stone have been drawn outwards. On such occasions I was glad to let the substance remain without further notice, and I confess to the fear that by referring specially to what I had noticed I might be deemed to have used unwarrantable liberties with the prostate. After repeated experience of this sort, it occurred to me that the propriety of leaving such loosened masses was questionable; and at last, on a tempting occasion, I seized, after the extraction, one or more of these bodies, and partly tore and partly cut them away. To my great delight no evil followed, and the patient, about seventy-five years old, made a most satisfactory recovery, having no special symptoms afterwards.

In 1848, I exhibited specimens of this kind at the Pathological Society of London, and not long after heard whispers about rough and improper proceedings in lithotomy—coming chiefly, or rather solely, from those who had rarely, if ever, performed the operation. Criticism of the kind was almost enough to deter from similar pathological information, but I have since followed the practice repeatedly whenever it seemed to me needful, and I have never had occasion to regret doing so. The subject has recently been brought under my notice in a peculiarly interesting manner. During lithotomy on a patient nearly eighty years of age, in whose case my anxiety was special, I recognised this condition of the prostate. There was no peculiarity in the operation, but in extraction I recognised the hitch above referred to. When the stone was extracted I turned my attention to the lower part of the prostate, and found it so loose already that I accomplished its enucleation with the point of the forefinger of my left hand, with as much readiness almost as if it had been a stone lying loose in the left lobe of the prostate. The circumstances were peculiar, perhaps unprecedented in the history of lithotomy, and I drew the special attention of a professional brother, a near relation of the patient, who was present to the circumstance. I felt convinced at the time, that whatever might be the result, I did the best for the patient, although his condition was critical in the extreme, and the operation was deemed a last resource. His recovery was slow, owing to previous exhaustion, but there never has been any irritation in the prostate. I do not feel at liberty to mention all the features and history of this case, but I pledge my word and name, for what may be their value, that it is worthy of being a precedent case.

The thought of being of service to any future sufferer, or any professional brother, induces me to put such experience on record in a manner more forcible than heretofore. The interests of patients and of surgeons are alike involved in these observations; and there are points or questions connected with them, which, in my estimation, deserve attention from all engaged in the department of surgery to which the above remarks relate. In many cases of stone in the bladder the distress of the patient is plainly attributable to this cause; but occasionally the presence of stone produces so little irritation that its discovery is a matter almost of chance. Often, however, enlargement of the prostate gives rise to most, perhaps all, of the symptoms and sufferings of stone. When stone is combined with enlarged prostate who can say from which cause the distress is greatest? So if it happens that the surgeon is called upon to relieve his patient from stone, and finds an enlarged prostate at the same time, why should he not, in extracting the stone, when it seems in his power, as in the cases above referred to, take away a superfluous portion of the prostate at the same time? The masses alluded to seem like adenoid tumours in the original substance of the prostate; their removal may be deemed a relief, and a possible solution of the distress of enlarged prostate; and as the entire wound in lithotomy most generally closes by granulation, the very removal of such well-nigh isolated masses will leave less surface for inflammation, suppuration, and granulation. If allowed to remain, it is not likely that they will adhere to their former site by immediate union; if they do not, a larger surface must be exposed to the irritating influence of urine, and a double suppurating and granulating surface must be the result.

But, without speculating on such matters, I hasten to enunciate the conclusion at which this paper aims. There is a certain timidity in the practice of surgery which may in many respects be deemed becoming; and precedents are often as much prized among us as with practitioners in law. There would, however, be no progress unless some one from time to time stepped out of the accredited course, and so, with such authority as I can humbly claim, I have thus ventured to put on record what some of my professional brethren may have hesitated to do, from a fear that they have been guilty, in their operations, of perpetrating some rough mechanism not in accordance with that nicety of manipulation which is thought so essential in the performance of the master handiwork in surgery—lithotomy.—*Lancet, Jan.* 1, 1867, *p.* 1.

57.—ON PERINEAL SECTION.

By C. G. Wheelhouse, Esq., Surgeon to the General Infirmary at Leeds.

[The method of performing this operation, recommended in the following paper, is practically, so far as its details are concerned a new one. Mr. Wheelhouse *considers* that it robs a very formidable operation of much of its difficulty, and in his own hands has led to more than usually happy results. Two cases had been operated upon, and were still in the wards of the Infirmary at the time this Clinical lecture was given; in one of which the stricture was traumatic, and the other gonorrhœal in origin.]

I regard the operation, as we are called upon to perform it in such cases as these, as amongst the most difficult in the whole range of surgery; for not only are we unable to introduce any guide into the bladder, but even the normal relations of the parts are frequently altogether altered by disease, and the track of the knife must of necessity lie in a very devious course. Moreover, unless that course, however altered and devious it may have become, be both accurately and unswervingly followed, and the urethra be *really* laid open through the entire track of the strictured portion, the operation may prove fruitless in the end, and nothing but disappointment to all concerned will come of it; the patient's condition will be no way improved, and the operation will be regarded as an unsatisfactory one; but if, on the other hand, it is performed with accuracy and precision, and with such care as you have seen exercised, I venture to say that, in a large majority of cases, it will lead to such permanent cure that, with moderate after-attention in the occasional use of the catheter or bougie, the urethra may be maintained in a very tolerably perfect condition. The patient, then, is secured in lithotomy position, and is so placed that the light may fall full upon the perineum; the buttocks are slightly raised, that it may strike as much as possible in the line of the axis of the outlet of the pelvis. A curved staff of full size, grooved upon its convexity, is then passed down to the obstruction, and its point is firmly pressed against the stricture; in this position it is steadily maintained by an assistant until the urethra has been opened. For this purpose, operators generally use the catheter they intend to introduce into the bladder; I prefer the grooved staff for the following reasons: it is more easy to cut into; it is less liable to roll under the knife, and so cause it to slip; and there is no choking of the catheter with blood, a circumstance which not unfrequently happens when that instrument is used, and which sometimes prevents the free escape of the urine even after the bladder has been reached, and thus leads to doubt as to whether this object has really been attained or not. I next introduce the forefinger of my left hand into the rectum, and feel for the apex of the prostate gland; having ascertained that as a landmark, I enter the scalpel, with its back to the rectum, immediately in front of the anus, and, cutting upwards and forwards, lay open the perineum. I then carefully clear the urethra where it is distended by the staff, by a few after-strokes of the knife. When I am satisfied that the urethra is quite cleared, I open it, not as is usual, by cutting upon the point of the staff, but by cutting into the groove a quarter of an inch or so above the point which is still kept firmly pressed down upon the stricture. I next seize with artery forceps each lip of the opening I have made into the urethra, and with these draw open the canal, carefully assuring myself that the mucous membrane is included. The position of the staff is next completely altered. Taking it in my own hand, I reverse it, turn the point out through the opening I have made, and use it to draw forward, fix, and steady the urethra. If these parts are now carefully sponged, I have the interior of the canal so fully exposed to *view* that I can steadily follow its upper wall; this I do with a fine probe-director until I have cut my way completely through the stricture, and have come out into the dilated part of the urethra which usually lies behind it, or as sometimes happens into a second or more strictures: this effected, I am generally able to pass the small director which I have been using immediately onwards into the bladder. Now, at this point I have seen the most skilful operators completely baffled; and although they have succeeded in effecting the division of the stricture most perfectly, I have known them fail entirely in their attempts to carry the catheter onwards into the bladder. Without a guide it is often a most perplexing and difficult matter to find the opening into the posterior portion of the urethra, or, when this is found, to insinuate the catheter into it by the side of the director; and it is precisely at this point that my little grooved director becomes of all-important service. Having reached the bladder with that, I turn the groove downwards; with a straight probe-pointed bistoury run along it, I make sure of the division of any further obstructing bands, and, finally, I completely open up the prostatic urethra by sliding along the groove of the director the little instrument which I now show you, the "probe-dilator," an instrument introduced by the late Mr. Teale for use in lithotomy, and thus obtain a broad metallic floor upon which I can, without any danger of failure, introduce a catheter of even the largest size.

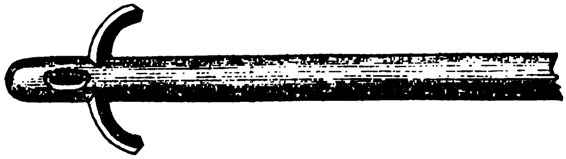
Thus I reduce the difficulty of laying open the stricture as much as possible, by following every touch of my knife through it *with my eye*, and of securing a free passage for the catheter through the posterior part of the urethra by a most easy method of free dilatation. Finally, I retain the catheter, armed with an elastic tube, in the bladder during the early period of the healing of the wound, and thus secure a free passage for the urine for some days at least.

Let me commend this method of operating very earnestly to your notice; you will find it more speedy in the performance, and more perfect in result than any less accurate proceeding, and I venture to hope and think that you will never regret the adoption of my rules.—*British Medical Journal, Feb.* 5, 1870, *p.* 125.

58.—ON A NEW FORM OF CATHETER FOR RETENTION IN THE BLADDER.

By Barnard Holt, Esq., Senior Surgeon to the Westminster Hospital.

The difficulty of retaining a catheter in the bladder, even when the patient is confined to bed, but still more when he pursues his ordinary avocation, is acknowledged by all. I have long felt the necessity for a perfectly flexible instrument, not acted upon by the urine, which should be capable of being retained in the bladder without any extraneous aid, such as tapes or other contrivance, which should allow the patient to make water at will, and at the same time produce less irritation than any of the flexible catheters at present in use. I have at last succeeded in devising the instrument shown in the drawing. It is made of vulcanised india-rubber, and has on either side a wing, or fin, of the same material, which prevents its escaping from the bladder.



Every surgeon is aware of the danger that attends the frequent ineffectual attempts to introduce a catheter, and many must have witnessed the peril that frequently arises in cases where the patient is obliged to act for himself—hemorrhage to an alarming extent, retention of urine, false passages, abscess, and all the concomitants of such cases. It is to remedy these, and to afford perfect security in cases of retention of urine not dependent on bad organic strictures, that the present instrument has been contrived. And I am happy in being enabled to add that, although further improvements may be required, the principle on which the instrument is constructed has been perfectly successful in every case in which the treatment was advisable. Its advantages are as follows: It can be introduced with ease; it may be worn for a considerable time without requiring removal; the patient retains perfect control over the bladder; he can pursue his ordinary business with the most trifling inconvenience; and, in cases of incontinence, the offensive, but hitherto necessary instrument, the urinal, may be dispensed with.

The following are cases in which the catheter has been worn for variable periods:—

J. H., a seaman, had been under my care for a very obstinate stricture of the urethra, complicated with fistulous openings in the perineum, through which the greater portion of the urine escaped. The stricture was treated by immediate dilatation, but the fistulæ did not heal; the urethra was subsequently incised through the openings, and a catheter was retained in the bladder. Urine, however, escaped by the side, and the treatment was unsuccessful. Three months since, and eighteen months after his operation, I saw the patient again, when I introduced the india-rubber catheter, and allowed him to continue his ordinary occupation. The catheter produced but the most trifling inconvenience, and he wore it for a month without its creating any irritation. He then began to pass water more frequently, and with some pain, when I removed it, and found small particles of phosphates adhering to the end. The catheter was not in the slightest degree damaged or altered by being so long in the bladder. As the urethra was tender, I decided to let him remain without it for a fortnight, when it was reintroduced, and I directed him to throw a small quantity of water into the bladder to prevent the deposit of phosphates. The second catheter he wore for five weeks, still continuing his employment, and removing the urine at will. When it was again removed, a slight deposit was detected on the end, but otherwise it was quite uninjured. The openings in the perineum have all but closed.

W. B., aged sixty-nine, a gentleman of active habits, has long suffered from enlargement of the prostate gland, which necessitates his introducing a catheter whenever the bladder required to be relieved. As a general rule he managed very well, but occasionally, more particularly at night, he experienced difficulty in introducing the instrument, and frequently the unsuccessful attempt gave rise to hemorrhage of a rather severe kind; his rest was disturbed, and the frequent passage of the catheter kept the urethra sore and irritable. I experienced no difficulty in passing the india-rubber catheter, which was easily retained in the bladder without extraneous aid. During the first day he felt some uneasiness, especially when the bladder was empty. This, however, soon passed off, and he was enabled to empty the bladder at will. The catheter was worn for a fortnight, when it was removed, cleansed, and reintroduced. He continues to wear it to the present time.

Captain ——, who for twenty years had suffered from obstinate stricture of the urethra, and upon whom every kind of treatment had been employed, consulted me in October last in consequence of fistulous openings in the perineum, through which the whole of the urine passed. A catheter could not be introduced through the stricture; and consequently the urine was passed, after great straining, through the abnormal apertures. He is paralysed on one side, and his general health is materially affected. After repeated trials, I succeeded in passing a catheter of the smallest size, and eventually, under chloroform, introduced the dilator, and enlarged the canal. The india-rubber catheter now entered the bladder, and he passed his urine with ease. His health speedily improved, he was entirely relieved from any straining, and had the entire control of the bladder. The catheter was removed at the end of a week, and after being replaced he returned to the country. At the expiration of three weeks it was again removed, and after being cleaned was reintroduced. This time he wore it for five weeks, when it was again removed and replaced, and he continues to wear it at the present time. It gives no pain; he walks out daily as well as his lameness will permit, and his general health is good. The fistulous openings are rapidly healing.

A. B., at present an in-patient of the Westminster Hospital. Six months since he was attacked with hemiplegia of his right side, and incontinence of urine. He had lost all expulsive power of the bladder, and the urine constantly dribbled away. Upon admission the urine was removed three times a day, and the bladder was washed out with tepid water; but as he did not regain any expulsive power, the india-rubber catheter was passed, and he at once had the entire control of the bladder. He was directed to remove the urine every four hours, which he accomplished without the slightest difficulty. At the expiration of a fortnight I removed the catheter. It was not in any degree injured, but there was a slight deposit of phosphates on the end. This was removed by washing in warm water, and the catheter was again introduced. The patient expresses himself as very much relieved; the catheter does not give pain; his general health is improved, and there is a possibility of the muscular coat of the bladder recovering its tone. This patient still wears the catheter, and may be seen by any surgeon who takes an interest in cases of a similar kind.

The above cases are sufficient to establish the principle that an india-rubber catheter of the form described may be worn for a considerable period without pain, and with the most trifling inconvenience. The wings do not irritate the neck of the bladder, as is proved by the fact that patients pass urine less frequently with the catheter in than without it. The phosphatic deposit which I have alluded to is very trifling, and I believe adhered to the end of the catheter because it was rough and imperfect. The catheters are now made in a mould, are always of the same shape and size, are perfectly smooth, and not in the least acted upon by the urine. This I proved by removing one that had been worn for six weeks, when it was found to be as perfect as on the day it was introduced. The catheters will be made in various sizes. The method of introduction is as follows; Place the catheter on a strong stilet with a handle, and let the stilet be of such a size that it will move freely backwards and forwards inside the catheter. Cover the catheter with powdered French chalk, or, if that is not at hand, smear it with a small quantity of sweet oil. Stretch the catheter on the stilet so as to make it as small as possible, press the wings against the catheter, and gently introduce it into the bladder. Having once entered the bladder the urine will flow, when the end may be stopped by a simple peg, or, what is better, a small metal stop-cock, similar to the end of an ordinary female catheter. The patient should be kept quiet for the first twenty-four hours, to allow the bladder to become somewhat accustomed to the catheter, and, to prevent it being grasped by the bladder, the whole of the urine should not be removed. The catheter may now be cut the desired length, and, for convenience, it should not project above an inch from the meatus. The patient must have special directions to prevent the instrument being entangled in the clothes, as there would be danger of its being rudely withdrawn; and he must not retain the urine in the bladder until the desire to empty it becomes very urgent, as, should anything obstruct the eye, the instrument might be forced out by the rush of urine; this is not, however, likely to occur in cases of atony of the bladder or enlargement of the prostate gland. He should also be directed to throw in once a day a small quantity of tepid water, to keep the eye clear, the bladder free from mucus, and prevent any deposit on the end of the catheter. The catheter must be worn in obedience to the feelings of the patient. So long as it does not produce pain or frequent desire to pass urine, it may be allowed to remain; but, as a general rule, I should advise its removal once a fortnight.

In conclusion, I may add that I believe the present instrument will confer a material benefit on those who are so afflicted as to require the removal of the urine by mechanical means, and that it will be the saving of many lives; and in this expectation I offer it to the profession. I must, at the same time, express a hope that its advantages will not be discredited by its adoption in difficult strictures, or where the common sense of the surgeon shows him it would be unsuitable. The catheters can only be obtained of Messrs. Baker, 244, High Holborn, to whose assistant I am indebted for the indefatigable pains he has taken to carry out my ideas. For the last two years I have been endeavouring at various other instrument makers to get the catheter made, but without success; and I therefore feel bound to give Mr. Baker the benefit of the sale. The principle of the wings I intend to adopt for other purposes, and I am now having a flexible india-rubber trocar made which I believe will be invaluable in all cases where the bladder requires to be punctured through the rectum.—*Lancet, Feb.* 19, 1870, *p.* 261.

59.—A NEW RETENTIVE CATHETER.

By Richard Davy, Esq., London.

On March 28, 1870, I exhibited at the Medical Society of London a new form of retentive catheter, which possesses the three essential qualities required for general use, viz.:—1. It is easy of introduction. 2. It is easy of retention. 3. It is easy of withdrawal. It consists of a French vulcanite catheter, through which a string is passed, emerging at a clean hole an inch and a half from the point, and then, bridging over the usual opening for the urine, is inserted securely at the point.

The opening for the urine is punched one inch from the point, and is on the opposite aspect of the tube to the usual hole. The handle consists of a leathern collar, with a slot in it, a knot in the string, and a plug on it.

1. To introduce the catheter. Fix it on a long stilette, well oil it, and remove stilette when the instrument is fairly in the bladder. 2. To retain it. Draw the string at the handle, fix the knot behind the slot, and use plug or not at your discretion. The effect of this is to reduplicate the terminal portion (three-fourths of an inch) of the catheter, so that No. 12 in the urethra becomes No. 24 in the bladder. 3. To withdraw it. Slip the string out of the slot; the elasticity of the tube restores the end to its original straight position, and withdrawal is painless.

To render these two last-named acts (Nos. 2 and 3) distinct by an anatomical simile. Suppose the end of the catheter to be a finger, then the string is the flexor tendon, and the elasticity of the tube the extensor.

Any surgeon may now easily make his French catheters self-retentive, or they may be purchased at a small cost of MM. Mayer and Meltzer, 59, Great Portland-street, W.—*Lancet, April* 9, 1870, *p.* 532.

60.—ON THE TREATMENT OF ACUTE ORCHITIS.

By J. Rouse, Esq., Assistant Surgeon to St. George's Hospital.

[There can be little doubt that, as a rule, the secreting structure of the testicle is entirely unaffected in the acute orchitis following gonorrhœa; and that the disease is a diffuse inflammation of the connective tissue of the part.]

If we refer to the various authorities as to the treatment to be pursued, we are surprised at the active, not to say violent, means adopted to subdue the inflammation, the character of which (established as it is by the excellent observers quoted) seems to be quite overlooked. Mr. Curling recommends antiphlogistic treatment: "Acute orchitis, if treated quite early with nauseating doses of tartar emetic, usually subsides rapidly, so that this plan renders local depletion unnecessary." "Tartar emetic may be prescribed in camphor mixture, with small doses of sulphate of magnesia and tincture of henbane. Pain and constitutional derangement may be relieved by one or two grains of calomel, combined with eight or ten grains of Dover's powder, or half a grain of morphia taken at bedtime. In addition to these active measures, leeches along the cord, or bleeding from the veins of the scrotum, is recommended." The treatment by antimony, calomel, and local bleeding seems active enough; but it was reserved for Mr. Henry Smith to recommend a very startling method of cure.

A patient suffering from acute gonorrhœal orchitis, with an unusual amount of swelling and pain, came under Mr. Smith's notice in July, 1863. From the severity of the symptoms it was thought that suppuration must have taken place, and a free and deep incision with a bistoury was made with the view of letting out the pus. To the dismay of the surgeon, a little serum and blood escaped, and the tubes of the testicle protruded through the wound. Two days subsequently the patient was quite free from pain, the swelling and redness had almost disappeared, the protrusion no longer existed. Mr. Smith was so struck by the fortunate termination of the case, that he determined to try the same treatment in other cases; and finding the method of "making a free and deep incision" give relief to pain, Mr. Smith was led to adopt it as the usual treatment of acute orchitis. No one can doubt Mr. Smith's statement of the result of his experiment; but from what has already been stated with reference to the pathological condition of the testicle in cases of gonorrhœal inflammation, we may safely conclude that Mr. Smith's idea that "the free division of the fibrous tissue enveloping the body of the testis, and the consequent removal of tension from the organ, was the secret of success," was erroneous.

Severe and unnecessary as the treatment seems to me, I think it is to be preferred to the calomel-and-antimony treatment still in vogue; for in all Mr. Smith's cases treated by incision no other remedies were employed, and the patient escaped all the horrors which Mr. Smith in his paper so well describes, that I am tempted to quote his words: "We all know what a terrible ordeal of violent remedies a patient with acute inflammation of the testicle has to undergo. In the first place, he is obliged to lie in bed for several days, a large number of leeches, or the constant application of ice, is necessary to relieve the pain; and at the same time the unfortunate wretch is compelled to undergo the process of severe purging and continued nausea by repeated doses of salts and tartar emetic, before any decided mitigation of his symptoms ensues.

Having thus briefly discussed the treatment usually adopted for acute orchitis, I must now lay myself open to criticism by stating that, in my opinion, the simplest, most satisfactory, and most efficient treatment is by opium. Until three years ago I was in the habit of treating all cases of gonorrhœal orchitis with calomel and opium, *i. e.*, two grains of the former with one of the latter, night and morning; and I never found it necessary with this treatment to give antimony, or to make use of local depletion. I object to antimony, not only because it is unnecessary, but also for the reason that patients with orchitis almost always complain of nausea; and it seems to me cruel to add more to the patient's sufferings than can possibly be avoided. Local bloodletting is undesirable: firstly, because it is unnecessary; and secondly, because, if the leeches be applied to the scrotum, it is often difficult to arrest the hemorrhage without causing the patient pain. In private practice there are many inconveniences connected with bloodletting in such cases, and these ought to have due weight with the surgeon. I was induced to leave off giving calomel in these cases from having observed the following case. I was sent for late one night to see a gentleman, who was said to be dying; and on my arriving at his bedside, I saw him in what appeared to be tetanic convulsions. I was told that he had been suffering from orchitis, and that, at the advice of a medical man, he had been taking calomel and antimony, and rubbing blue ointment into the scrotum over the inflamed testicle. The suffering was so acute that the poor fellow was screaming with the pain; the pulse was 160, and there was profuse sweating. I found that he was already salivated; the testicle was enormously swollen, acutely tender (as well it might be), and looked as if suppuration was going on. Hot opiate fomentations were applied to the part, and a large dose of opium given. The following morning the pain had subsided; and finding so much improvement, I continued the opium and the fomentations. I confess I was surprised to find that in three days, without any other remedy save a purge, the pain quite vanished, and the swelling and tenderness considerably subsided. In the course of a few more days the swelling had quite gone, and the patient was able to resume his usual avocations. This case was so striking in its result, that I resolved to treat the next case I met with in the same way, and see whether the opium really influenced the course of the malady, or whether it had only been useful to allay the irritation set up by injudicious treatment. Accordingly, in the next case that came under my care, having first purged the patient with an ordinary senna draught, I commenced giving a grain of opium night and morning. The pain was quite relieved after two grains had been taken; and in three days all the tenderness had gone, and much of the swelling. I then, bearing in mind the pathological condition of the organ, prescribed twenty drops of the acid tincture of steel three times a-day; and in a week from the commencement of the treatment the patient had quite recovered. Since that time I have always treated acute orchitis on this plan. My colleague Mr. Pick, and several of my friends who have been induced to try it, have met with equally satisfactory results; so that I think I am not carried away by my own prejudice when I advocate this simple treatment in preference to the old and complicated one. The two following cases I give because they were treated in the wards of the hospital, and were seen by many persons when under treatment; they are therefore more satisfactory to bring forward than the numerous cases treated in the out-patient department.

Case 1.—W. H., aged 20, was admitted into the Belgrave ward, Sept. 30th, 1868, with acute orchitis. One month before admission he contracted a gonnorrhœa, for which he had had no special treatment. Two days before admission he was attacked with very severe pain in the left testicle. On admission, the testicle and cord were much enlarged, and he complained of extreme pain. There was considerable effusion into the tunica vaginalis; the tongue was coated and the bowels confined. A senna draught was ordered immediately; and as soon as the bowels had been well opened, he was given a grain of opium night and morning, and the testicle was kept enveloped with a lotion of Goulard and tincture of opium. On the 1st of October all the pain had subsided, but as there was great tenderness, the opium was continued. On the third day all the tenderness had disappeared, and the swelling had much diminished. Oct. 4th. The swelling was still subsiding, and there was no pain or tenderness. He was then ordered tinct. ferri perchloridi ♏ xx. in water, three times a day; and on the 7th he was discharged quite well.

Case 2.—F. W., aged 17, a thin delicate boy, was admitted into Harris ward, Nov. 5th, 1869, with acute orchitis. He had had gonorrhœa for three weeks previously. On admission, there was no discharge from the urethra, but the left testicle and cord were inflamed and acutely painful. After having been purged, he was given a grain of opium night and morning, and the testicle covered with hot opiate fomentations. On the 8th, all the pain and tenderness had disappeared, and the swelling had materially diminished. Tinct. ferri perchloridi ♏ xx. was ordered three times a day; and he left the hospital quite recovered on the 13th, no fresh discharge having appeared.

In addition to the purging, which is essential before the opium treatment is commenced, I direct that the testicle should be kept enveloped in a hot fomentation of Goulard and laudanum, which is of considerable use in producing ease.

It may probably be asked, if, in all the cases I have treated, I have found the plan advocated equally satisfactory. I can answer, that I have had only one case—that of an out-patient obliged to go on with heavy work—in which I have had to modify the treatment. In that case, the inflammation, which was intense, had existed some days before I saw the patient, and I thought that there was lymph effused in the tunica vaginalis. In this case the opium, at the end of three days, had not produced the usual effect, so I added one grain of calomel to each pill. In two days such marked improvement took place, that I was able to leave off the calomel; but this patient was under treatment for two instead of one week, which is the time I consider necessary for recovery if these means be adopted.

There is another mode of treatment I have not yet noticed: to wit, strapping of the testicle. I do not doubt for a moment, that the strapping once applied, produces considerable relief to pain; but I object to it on the same principle that I do to antimony, bloodletting, and especially to a deep free incision into the testicle, namely, that it is unnecessary, and causes considerable and avoidable pain. If one application of strapping were sufficient, there would be less objection to its use; but to be of real service, it ought to be reapplied at least once in twenty-four hours; and the discomfort of removing the straps is almost as great as putting them on, and if the surgeon does not possess the greatest delicacy of touch, the patient is much to be condoled with. As contrasting the two modes of treatment, I will briefly mention an instructive case that came under my own observation. Before I commenced the *opium treatment*, I had a delicate lad with an acute orchitis, which I treated in the usual way; and notwithstanding every care, it was six weeks before he was able to resume his studies. About a year ago, he was again suffering from a similar attack. This time I treated him with opium, followed up by the tincture of perchloride of iron; and in one week he was about again. The last attack was not at all less severe than the first; but the difference of the result may be entirely attributed to the treatment.—*St. George's Hospital Reports, Vol.* iv., 1870, *p.* 251.

61.—ON THE TREATMENT OF INCONTINENCE OF URINE IN CHILDHOOD AND YOUTH BY COLLODION.

By Sir D. J. Corrigan, Bart., Physician in Ordinary to the Queen in Ireland.

[The treatment of this painful affection may be divided into the constitutional and the local. Mechanical means of treatment hitherto used are difficult or impossible to be carried out, and blisters, copaiba, belladonna, and preparations of iron are very uncertain and unsatisfactory.]

Long since I tried to close the opening of the prepuce with adhesive plaster, or court plaster, and in one case, that of a young man of twenty years of age, who had entered the army, and who was intelligent and careful, the result was favourable, but there were great difficulties about it. The application took time, and could not be carried into successful effect with boys and children.

The mechanical treatment to which I now wish to draw attention is the treatment by collodion. It is most easy of application, occupies scarcely a minute, and can be carried out at school, college, or elsewhere, in perfect privacy.

All that is necessary is, while the prepuce slightly curved up is held with the left hand, to smear over the little cup thus formed by the extremity of the prepuce with collodion by means of a small camel's hair pencil or blunt end of a penholder. Almost as fast as applied the collodion solidifies. In contracting it draws closely together the edges of the prepuce, and thus the exit for the escaping urine is closed.

A boy of eleven years of age has, after one lesson, been able to use the collodion, and has used it every night carefully and diligently, so anxious has he been to cure himself of what he considered a disgrace. A fortnight's use is sometimes sufficient for the cure. A relapse is easily dealt with. A solution of gutta-percha in chloroform would seem at first sight to be equally applicable, but it is not. The solution of gutta-percha is much longer in hardening, and it possesses no contractile powers.

When the child or youth desires to pass water the little wedge or cap of collodion is easily removed with the finger nail.

When I first used this collodion application, my expectation was, that the bladder would act so forcibly against it as to cause sudden pain, and oblige the patient to jump at once out of bed and quickly remove the collodion, and that he should then repeat the application before returning to sleep.

I was agreeably disappointed. There was no pain; no awaking; but on rising in the morning the prepuce was found slightly distended with urine, and the collodion was removed without difficulty.

This unexpected result would lead us to infer that the action of the muscular contractile fibres of the bladder has little to do in causing the nocturnal incontinence of urine in childhood, and that the escape of the fluid is rather due to want of opposition in the sides of the canal of the urethra, or to a feeble state of the circular fibres which are supposed to constitute the sphincter of the neck of the bladder.

Acting on this view I have recommended the child's bed to be made in such form as that while preserving the usual slope for head and shoulder, the rest of the bed shall gently rise as an inclined plane, from hips to feet, so as to allow the urine in the bladder to gravitate towards the fundus, rather than towards the trigone.

In all the instances in which I have used the collodion application the prepuce has been, as, I believe, is nearly always the case in children and boys, projecting over the glans, or in a state that may be designated as natural phimosis. But I do not anticipate any difficulty in using the same application in cases where the corona glandis might be exposed, as the collodion would, I should expect, act equally well over the orifice of the urethra as over the opening in the prepuce.

It may be presumption, but I cannot conclude without expressing a strong opinion against one part of the management of these cases, which is very frequently practised through the best motives on the part of mothers and nurse and sanctioned by the recommendations of some medical authorities—th practice of awaking the child at stated intervals to pass urine.

I have never seen any benefit whatever from it, and I think I have, on th contrary, always seen aggravation of the affection from it, not unreasonabl to be explained, on the principle that such practice is really training the bladder to empty itself at stated periods, when the object is that it should b trained to retain its contents.—*Dublin Quarterly Journal, Feb.*, 1870, *p.* 11

DISEASES OF THE SKIN.

62.—ON THE THERAPEUTICS OF CHRONIC DISEASES OF THE SKIN.

By Dr. McCall Anderson, Professor of Medicine in Anderson's University, Physician to the Royal Infirmary, and to the Dispensary for Skin Diseases, Glasgow.

If itching is a marked feature (and, for the present, we leave out of consideration diseases dependent on parasites, such as scabies—the itch—which require special treatment), we may expect to derive benefit from the use of *empyreumatic oils or their derivatives.* It is right to warn you, however, that, in exceptional cases, these increase the irritation to an intolerable extent; but in the majority they not only relieve the itching, but are decidedly curative, especially in chronic erythema, chronic eczema, and psoriasis (although more slowly), while in prurigo they give immense relief. It is well to know that in some persons, with sensitive skins, their application produces all the phenomena of dermatitis (burning heat, redness, swelling, and sometimes an eruption of vesicles and bullæ). Their long-continued use, too, produces, in all persons, though more speedily in some than in others, an inflammation at the orifices of the hair follicles: papules and pustules make their appearance, which present this peculiarity, that in the centre of each spot a black, tarry point is observed. This eruption has been called tar acne by Hebra. Some time ago I prescribed for a little girl, who was affected with slight chronic eczema of the leg, a lotion containing one of the empyreumatic oils. About six weeks afterwards her mother brought her to me again, the lotion having been continued regularly in the interval, and informed me that the disease was a great deal worse. On examining the part, I found that the eczematous eruption had quite disappeared, and that its place was taken by an eruption of tar acne. The lotion was discontinued, and the artificial rash rapidly subsided.

The empyreumatic oils with which I am most familiar are, first, Pix liquida, or common Wood-tar, of which Guyot's solution of tar is a purified form, and possesses these advantages, that it mixes with water in all proportions, does not emit such a pungent odour, and does not discolour the skin to the same extent; second, Coal-tar (Pix mineralis), of which the best form is the liquor carbonis detergens of Wright and Co., a solution which forms a creamy emulsion with water; third, Oil of Cade (Oleum Cadini), which is the product of the dry distillation of the wood of the *Juniperus oxycedrus;* fourth, the Oleum Rusci, which is obtained from the bark of the *Betula alba*, or white birch. The odour of the last two is not so pungent or disagreeable as that of the others, but they are more expensive, and therefore less adapted for dispensary practice.

These preparations may be employed alone—in cases of chronic psoriasis, for example, after the removal of the silvery scales—in which case they should be rubbed into the affected parts, twice a day, as firmly as possible short of causing pain, or as lotions or ointments, as in the following prescriptions;—Guyot's solution of tar, soft soap, rectified spirit, of each one ounce; spirit of rosemary, one drachm: mix. Wash off before each reapplication.—Nitric oxide of mercury, one scruple; nitrate of mercury ointment, one drachm; oil of white birch bark, one drachm and a half; benzoated lard, four drachms: mix.

Two other remedies of this class must be mentioned—namely, Creasote and Carbolic acid.

Creasote may be added to ointments, in the proportion of from five to ten grains to the ounce, for the purpose of allaying irritation of the skin. In cases of chronic psoriasis a strong creasote ointment was recently recommended by Mr. Balmanno Squire, and I have found it very useful, although it is sometimes too irritating. The following is the form of ointment he employs:—Creasote, two ounces; white wax, one ounce: dissolve. Rub very firmly into the eruption night and morning after the scales are removed.

Carbolic acid has a less disagreeable odour than the tarry preparations, and is more cleanly. It is soluble in water with the aid of a little glycerine or spirit, and forms a colourless solution. For these reasons it can often be used when tar is inadmissible, as when an eruption is situated upon an exposed or a hairy part; but it must be admitted that, as a rule, it is not nearly so effectual as the empyreumatic oils. The following is a form in which I frequently prescribe it:—Crystallised carbolic acid, two drachms; Price's glycerine, six drachms; rectified spirit, four ounces; distilled water, one ounce: dissolve. Sponge the affected parts two or three times a day, and also when itching is complained of. This solution is of use in cases of chronic erythema, chronic eczema, and the like, and not only relieves irritation of the skin, but also is directly curative.

Potash applications have of recent years been brought prominently under the notice of the profession by Hebra. They are of use in favouring the removal of abnormal products—*e. g.* the scales of psoriasis,—and in many cases they favour the cure of the eruption in virtue of their stimulating effect, especially in combination with other remedies, such as tar.

Those which I am most in the habit of using are, potash soap, black soap (sapo mollis), liquor potassæ, and solutions of potassa fusa varying in strength from two grains to a drachm to the ounce of the excipient. I shall refer to stronger solutions under the head of Caustics. A few illustrations may be given of their use.

In cases of tinea versicolor, that brown scurfy eruption which attacks the covered parts of the body, due to the presence of a fungous growth, the Miscrosporon furfur, and of which we have already had several illustrations, we can effect a cure by scrubbing the *whole* of the eruption night and morning with black soap or its solution in spirit. The soap acts as a stimulant, but is chiefly serviceable owing to mechanically removing the scales which are loaded with the fungous matter. But the cure may be accelerated by the use of one of the so-called parasiticides, which can be combined with the solutions of black soap as follows: Perchloride of mercury, twelve grains; black soap, four ounces; rectified spirit, two ounces: dissolve, and add oil of citronella, one drachm. Rub night and morning, as firmly as possible, into the whole eruption short of causing pain.

Again, potash applications are useful in cases of chronic eczema, not only by removing morbid products and allaying irritation, but also by stimulating the parts and favouring the removal of the infiltration of the skin when it is marked. For this purpose I generally employ solutions of potassa fusa, and vary the strength of the solution according to the amount of the infiltration and the extent of the disease. It should be rubbed into the affected part with a large paint brush, or with a small sponge provided with a handle, until decided smarting and excoriation result, when its action may be stopped by washing with water and applying a soothing ointment. If the surface is left alone after the application of the solution, it is soon covered by an immense number of gelatinous drops, showing the extent to which it has been stimulated. After the effect of the first application has passed off, it may be repeated, and the treatment continued until the infiltration of the skin is gone, when the cure may be accelerated by the use of some other application, such as the oil of cade, or the like.

Lastly, in cases of chronic general psoriasis, Hebra's modification of Pfeuffer's treatment may prove effectual. This consists of rubbing soft soap into the whole of the eruption twice a day for six or eight days, each patch being on one occasion rubbed so hard as to remove the scabs entirely and to cause slight bleeding. During this time, and for a few days thereafter, the patient lies in bed enveloped in blankets, after which he takes a warm bath and dresses himself. The treatment often requires to be repeated, and is only successful in a few cases, for which reasons, and also owing to the pain which it produces, and the necessity of confining the patient to bed, it can seldom be carried out in private practice.

Mercurial applications are often of service in simple inflammations, although not to the same extent as the preceding remedies; while in syphilitic affections they are almost indispensable. If itching is a prominent symptom, they may with advantage be combined with one of the empyreumatic oils. Those which are most valuable are corrosive sublimate, calomel, white precipitate, red oxide, and red and green iodide of mercury, and ointment of nitrate of mercury, not to speak of the well-known yellow and black washes of the Pharmacopœia. A few illustrations of their use as powders, lotions, and ointments may be given.

In cases of syphilitic condylomata, at the anus we shall say, Ricord's treatment is very effectual. This consists of washing the parts twice a day with solution of chlorate of soda, drying them, dusting them with calomel, and separating them with a piece of clean dry lint.

Again, in cases of acne and in chronic erythema of the head (pityriasis capitis, as it is often called), the following lotion is of use:—Perchloride of mercury from twelve grains to one scruple; Price's glycerine, four drachms; rectified spirit, five ounces; spirit of rosemary, one drachm; cochineal, one grain: mix and strain. Dip a piece of sponge or flannel into the mixture, and rub firmly into the part night and morning.

In a recent very able article by my friend Dr. Moriz Kohn, of Vienna, on Lupus Erythematodes, the value of emplastrum hydrargyri in that affection is referred to; and I can amply corroborate his experience of it in the treatment of this and of allied affections. A piece of lint the size of the part is spread with the melted plaster and applied, and changed once in twenty-four hours.

Lastly, when we have to deal with patches of dry eczema (eczema siccum), or of psoriasis, and, above all, when we have to treat dry syphilitic eruptions, the following ointment may be used:—Subchloride of mercury, one drachm; ammoniated mercury ointment, two drachms; glycerine (Price's), one drachm; simple ointment to one ounce: mix. Rub firmly into the eruption night and morning.

It must never be forgotten that all kinds of mercurial applications are to a certain extent absorbed, and hence you must warn your patient of the possibility of salivation, especially if you do not see him often, and if a considerable extent of surface is being acted upon.—*Lancet*, *Dec.* 4, 1869, *p.* 763.

63.—ON PRURITUS SENILIS.

By Dr. McCall Anderson, Professor of Medicine, Anderson's University, Glasgow.

A gentleman, aged about sixty-five, of a spare habit of body, whose general health was fair, with the exception of a marked tendency to constipation, and who had the advantage of plenty of out-door exercise, consulted me on account of intolerable itching over the whole body, that malady which is described under the title of pruritus senilis, and which has no connexion, as some would have us believe, with phtheiriasis corporis, the disease due to the presence of lice, and which is so common in old persons. His skin was the seat of a pruriginous eruption, the result of the scratching in which he indulged, and the irritation of the skin interfered much with his sleep. After a trial of other means, which were only very partially successful, he procured, at my request, a complete underdress of vulcanised india-rubber cloth, on commencing to wear which the itching and eruption completely disappeared.

This treatment is useful also in cases of prurigo and ichthyosis, and probably in most obstinate localised eruptions. It possesses this advantage, too, that it does not interfere with the simultaneous use of other local applications. The dressing often proves curative, even when the patient is only able to make use of it at night; but of course it is more quickly and more certainly successful if it is worn continuously. It should be removed from time to time for the purpose of cleansing it, and of wiping the skin; and if, as often happens, the tender skin in the vicinity of the eruption is abraded and raw, a little benzoated zinc ointment may be applied with advantage.—*Lancet*, *Dec.* 18, 1869, *p.* 834.

64.—ON THE CONSTITUTIONAL TREATMENT OF DISEASES OF THE SKIN.

By Dr. McCall Anderson, Professor of the Practice of Medicine in Anderson's University, Glasgow.

A disease which is purely local cannot be benefited by any internal medicine (except arsenic, which acts specially upon the skin), while local treatment is almost always preferable to it. On the other hand, if an eruption is symmetrical—thus indicating, as a rule, its constitutional origin,—or diffused over an extensive surface, it is much more likely to yield to constitutional treatment. Again, if an eruption is coming out rapidly, even when there is constitutional reaction, it generally requires what is denominated a cooling treatment, and is likely to be aggravated by the use, at the outset, of iron, arsenic, and such remedies. It must also be borne in mind that if any derangement of internal organs, of the kidneys, digestive organs, &c., complicates a skin affection, remedies specially directed against the skin disease—tonics, for example—are almost certain to aggravate it.

As long as an eruption continues decidedly to improve, and if the general health is not suffering from the use of the remedy, no radical change should be made in the treatment; but if, as sometimes happens, the patient tires of the long continuance of one prescription, the remedy may be given in another form. Further, if a particular medicine is decidedly indicated, and if the patient starts objections to it without good reason, and if you are of opinion that no other medicine has any chance of being equally effectual, it is sometimes allowable to give it in a concealed form. (It is in order that the patient may not know that he is taking opium that the name of the opium pill of the Pharmacopœia has been changed from "pilula opii" to "pilula saponis composita.")

In conclusion, let me say that the most judicious treatment is very apt to prove abortive if the diet and regimen are not carefully attended to, in regulating which you must be guided by broad general principles. But let me warn you—and this is a point which is too often ignored,—that sea-air and sea-water are very apt to prove prejudicial in the subjects of skin affections, with the exception, perhaps, of those labouring under strumous diseases.

Purgatives or aperients are of service in at least one-fourth of all skin diseases, at the outset at all events; and many can be cured by the exclusive use of them. This is especially true of the eczematous group when seen in the early or acute stage, and when associated with digestive derangement or constipation. In doubtful cases it is safer to inaugurate the treatment with aperients; but it must never be forgotten that where debility is well marked, or where there is a decided tendency to ulceration, great caution is required in the use of purgatives. In the employment and selection of purgatives and aperients we must be guided by general principles.

A very excellent aperient is the well-known sulphate of magnesia and sulphuric-acid mixture; to which, if there is a gouty tendency, a little wine of colchicum, or, if anæmia, sulphate of iron, may be added as follows:—Sulphate of magnesia, three ounces; dilute sulphuric acid, an ounce and a half; sulphate of iron, three drachms; simple syrup, six ounces; syrup of ginger, one ounce; infusion of quassia to twenty-four ounces: a tablespoonful in a good deal of water, three times a day.

Another very useful tonic aperient, especially if the bowels are easily moved, and if there are indications of nervous debility, is the following:—Phosphate of soda, three ounces; dilute phosphoric acid, two ounces; syrup of ginger, six ounces; compound infusion of gentian, eight ounces; distilled water to twenty-four ounces: shake the bottle: a tablespoonful, in a large wineglassful of water, to be taken three times a day.

In each case the dose must be so regulated that the bowels are kept freely open. If purging is induced it must be diminished; while, if the bowels are not acted upon, a pinch of sulphate of magnesia may be added to each dose in the case of the first prescription, a little phosphate of soda in the second.

In acute cases, one or two full doses of calomel, followed by castor oil or a seidlitz powder, is often beneficial at the outset; but prolonged purgation must in every case be avoided, for although it may remove the eruption for a time, it returns whenever the treatment is stopped, and, by weakening the patient, may indefinitely prolong the disease.

We are told that sulphur is the great blood depurant in the case of diseases of the skin; but, for my part, I have as little faith in it when administered internally as when used as a local application. When it does good, it is generally in virtue of its purgative action; while it has this drawback, that it is converted into sulphuretted hydrogen, so that the secretions have a disagreeable odour. It is usually given in electuary with acid tartrate of potash, but it is better to prescribe one of the natural mineral waters containing it; and the fact that some of these do not act as purgatives must not be taken to disprove my assertion with regard to the *modus operandi* of sulphur, for the benefit which accrues may be due to the combination of salts held in solution. Those of Harrowgate and Moffat in this country, and of Aix-la-Chapelle, Enghien, Barèges, and Luchon on the continent, have the greatest reputation in this respect; and while some of these waters may be had from the chemist, it is always more judicious, when it can be effected, to send the patient to the spring itself, for he is thus certain to get the waters fresh and pure, and, away from home and the fatigues and anxieties of business, his body is at the same time invigorated and his mind refreshed.

Diuretics are indicated if the kidneys are torpid, especially in the treatment of the erythematous and eczematous group and in acute cases. Their diuretic action, however, does not always account for the good result observed; thus alkaline diuretics, such as the bicarbonate of potash, or neutral (which in the system are converted into alkaline) salts, such as the acetate of potash, probably do more good in virtue of their alkaline reaction. And this leads me to remark that *alkaline medicines* are especially useful in the treatment of skin diseases occurring in rheumatic and gouty subjects, and in persons who are martyrs to acidity, or in whom there is a tendency to the deposit of uric acid and of urates in the urine. The alkaline and neutral preparations which are most used are salts of potash, such as the acetate, bicarbonate, and citrate; but, if a stimulant is required, I generally prefer the carbonate of ammonia; and it will often be found of advantage to combine these remedies with arsenic, or, if there is a gouty tendency, with colchicum:—Carbonate of ammonia, one ounce; solution of arsenic, three drachms; syrup of ginger, six ounces; infusion of cascarilla to twenty-four ounces. A tablespoonful in half a tumblerful of water three times a day after food.

It must never be forgotten that alkalies should be given largely diluted, and also some time before food, for although the administration of a small quantity of an alkali seems to cause an increased flow of gastric juice, a large quantity may neutralise its acidity. The dose should be so regulated as to keep the urine *constantly alkaline* as tested with litmus paper; and the medicine should be steadily continued, unless it disagrees, until some time after the disease has disappeared.

Sedatives and narcotics are indicated under the same circumstances as in the treatment of diseases of other organs. But let me remind you—and the remark applies not merely to skin diseases—that sleeplessness is often the result of debility, in which case tonics, especially iron and arsenic, are the best narcotics. Sedatives and narcotics are of no use for the relief of irritation of the skin, except in so far as they may induce sleep; indeed if they derange the stomach they are very apt to increase the irritation.

But, as is well known, opium in small doses, frequently repeated, is of value in the treatment of affections of the skin occurring in broken-down subjects, especially in cases of ulceration; but then they do good in virtue of their stimulating, rather than of their narcotic, properties.

In genuine cases of urticaria perstans, that is nettle-rash, recurring from day to day, and from week to week, when it is independent of local causes, and when no constitutional derangement (disorder of the digestive organs or the like) is present, sedatives are sometimes curative, especially bromide of potassium in full doses.

Lastly, it need only be mentioned that the neuralgia which so frequently accompanies and follows attacks of zona (shingles) is best relieved by the subcutaneous injection of morphia.

Cod-liver oil is indicated in the treatment of strumous diseases of the skin, although it is of more value in preventing fresh outbreaks than in removing existing manifestations.—*Lancet, March* 19, 1870, *p.* 401.

65.—THE TREATMENT OF THE TINEÆ, OR RINGWORMS.

By Dr. Tilbury Fox, Physician to the Skin Department of University College Hospital.

[Although fungi are undoubtedly the cause of the lesions of the hair and epithelium peculiar to the tineæ, we ought to remember that tineæ do not flourish on healthy surfaces. Persons attacked by tineæ always assimilate very tardily, and are generally deficient in fatty matter. This must be attended to in the treatment of the case. A large amount of fatty matter should be taken as food, or in the form of cod-liver oil.]

It is not so necessary to crop off the hair in tinea decalvans, because the loss of hair is so conspicuous that it at once indicates the seat and extent of disease; but the same rule as to the necessity of using remedies beyond the limit of the apparent disease is doubly needful in this variety of tinea. Well, having cut short the hair, we are enabled to see the contrast at once between the upright and shining hairs of health with their connected healthy scalp, and the dull, brittle, twisted and broken off hairs and the scaly or inflamed scalp of disease. If there be much crusting as in favus, or scaliness as in tinea tonsurans, we have recourse to cleansing by poulticing and rubbing in oil, and then we may, to destroy the fungus germs free about the surface, keep the scalp bathed in a solution of hyposulphite of soda ℥ss. to ℥vj. of water, or sulphurous acid one part to four or six of water. In this way in a couple or three days we have a perfectly clean surface, and we can then see the exact extent of disease in contrast to the healthy parts, of course. In the slightest cases, and in ringworm of the non-hairy parts, this preparation is needless, save, as before observed, in regard to clearing the hair away from actual diseased spots.

Secondly. We should take measures to prevent the dissemination of the disease from spot to spot by the transplantation of spores and spore tubes. This is effected by observing scrupulous cleanliness, by using parasiticides to the whole scalp if the disease is severe, and by oiling the scalp also. The collection of scales must be prevented also. I am in the habit of telling nurses or parents to care for these cases of ringworm thus. The parasiticide application is to be applied say twice a day; that is, in the morning, after the head has been carefully cleansed and washed with soap and water, and at night.

After each time of using the parasiticide the scalp should be pomaded over lightly, or covered with rag wetted with a solution of the sulphurous acid or the hyposulphite of soda. Ordinary oil or pomade may be quite as efficacious in some cases, provided it be fairly applied so as to grease the scalp.

Thirdly. We should in marked cases get away as much of the fungus as we can, and that bodily—bodily with the hair, where that exists, and when it is loaded with the fungus germs. This leads us to the question of epilation. Now in the three tineæ which attack the scalp—t. favosa, t. tonsurans, and t. decalvans—epilation is called for. This statement is in contradiction to the general teaching on the subject, but I know that it is true. In favus the application of parasiticides must go hand in hand with epilation, an inch or more of the scalp being cleared of its hair each day. In tinea tonsurans many of the hairs are brittle, and break away when we attempt to pull them out; but many others are actually removed, and the attempt should be made to get as many away as possible, and as in the case of favus a certain area should be cleared each day, parasiticides being used after each sitting. I feel sure that a very erroneous idea is abroad that epilation is useless in tinea tonsurans. If the hairs are not very loose, and the epilation gives rise to pain, it is then advisable to rub in the oil of cade freely, once or more, or to blister the diseased spots, when the hairs are loosened and can be readily extracted. But it must be remembered, both in favus and tinea tonsurans, that some of the fungus elements may be left behind in the follicle, and growing up into the hairshaft leads to disorganization of the hair; under these circumstances the hairs must be again removed by epilation. In tinea decalvans we often see short, club-like broken off hairs around the extending edge of the disease; these are to be carefully extracted, for they contain the fungus elements. They are almost invariably overlooked. In tinea sycosis epilation is absolutely needed. It is very important indeed, I think, when tinea tonsurans is in progress, to remove the short dark stumps of hairs which sometimes abound over the diseased patches. These stumps have loosened their attachment to the papillæ, and are like so much dead matter upon which the fungi luxuriate. They are always loaded with spores of large size, and are as so many laboratories, capable of disseminating the germs of disease far and wide. What we need to do in addition to killing the actual fungus is to prevent its re-growth in the part from whence it has been exterminated. But, speaking of epilation as a whole, how long or how many times is it to be repeated? The microscope and the general aspect of the disease must guide us. If the hairs which spring up over a patch look diseased; if they are brittle and loaded with spores; if the formation of the root-sheath of the hair is destroyed and the root itself be invaded by the fungus, then we must epilate and use parasiticides again—it may be twice, it may be three times. This brings us, fourthly, to *the use of parasiticides.* Where the disease affects the general surface of the body, we at once start in the treatment with these remedies; but where the hairy parts are implicated, save in the slightest cases, the employment of the preparatory measures above described is requisite. Now there must be some distinct principle upon which we should use these agents. Our object is to bring them into contact with the parasitic elements, and this in the slighter forms of disease is readily done by friction, or by using, as a *medium* for their exhibition, some fluid that penetrates the tissues. In severe and long-standing cases epilation is absolutely needed to be practised so as to clear away the plugging up of the follicles by the diseased hairs,

Taking the general run of cases, I think the lesson we need to learn in regard to them is the use of friction, with ointments of a weakish description *quoad* the parasiticide with epilation when this is called for, rather than the application of strong and active remedies; at least I have seen many bad results from the too free and too frequent use of strong and perhaps vesicating parasiticides. If we employ the latter, it should be *occasionally* but *effectually.* I have had under my care cases in which the greater number of the follicles of the scalp have been inflamed simply from the use of strong remedies repeatedly applied; sometimes there has not been a vestige of fungus present, the inflammatory state of the follicles being taken for an aggravation of the tinea; microscopic examination should have settled the difference in a moment. Let me take the varieties of ringworm in detail, and the simplest first. Chloasma: this is very easy of cure by the use of a lotion of ℥ ss. of hyposulphite of soda in ℥ vj. of water. The skin should be first washed with yellow soap and water, and the lotion at once applied—the part being frequently dabbed with it. The lotion should be continued for some time, a fortnight in severe cases, after the eruption has disappeared. The use of the soap and water is to get rid of the natural fatty matter, so that the watery lotion can act efficiently. It is a good plan to sponge the skin just before using the lotion with a little weak vinegar. If the tinea versicolor be very old and extensive, it may be advisable to soften up the desquamatory patches by rubbing on a little liquor potassæ. I have cured cases at a sitting by the use of liquor potassæ first, and then a strong sulphurous acid lotion.

Tinea circinata is an easy affair to cure. A solution of caustic in the spirits of nitric ether—in the proportion of two scruples to an ounce—or even tincture of iodine, or acetic acid applied once or twice, will frequently suffice. I prefer the use at the first of Coster's remedy; that is to say, a drachm of pure iodine dissolved in an ounce of oil of petroleum, or oil of tar, to be followed after the clearing away of the scab which forms—that is, in two or three days—by an ointment of ammonio-chloride of mercury, from ten to thirty grains to an ounce.

In the case of so-called "eczema marginatum," which affects the inner and upper parts of the thighs, I use a washing with soft soap, and the use of hyposulphite of soda lotion, or an ointment of bichloride of mercury, four to six grains, and creosote three or four drops to the ounce of lard. But I lay great stress in all these cases on the removal of the normal fatty matter by soap before using parasiticides, if in solution.

Birmese ringworm, which affects the pubes, the axillæ, and other parts, often appearing as raised erythematous circles in connection with what might be termed erythema circinatum about the body, is best cured—and I have had several bad cases of the kind—by the repeated use, four or five applications, of the iodine and tar application before referred to, using at the fag-end of the treatment an ointment of the pyroligneous oil of juniper and ammonio-chloride of mercury. In true parasitic sycosis epilation is called for, and then a parasiticide may be used at the same time. I know nothing better than the bichloride ointment. The microscope must be constantly used to determine when the destruction of the parasite is effected, and the hair-forming apparatus is doing its work fairly, lest we produce irritation that is taken for an increase of the disease.

But let us turn to the cases where the scalp is affected. I have already spoken of epilation being necessary in all varieties, and have defined the conditions under which it is to be practised. I should add that in tinea kerion—that variety in which the hair follicles are inflamed and the disease-patch is swollen and boggy-like—the hairs being loosened and coming away in the albuminous discharge, it is best to extract what hairs are loosened.

Well, in severe and recent cases we should make at the outset, after having got a clear surface to work at, a free and effectual application of some strong parasiticide. In favus and in tinea tonsurans, where the hairs are not partly loosened, I often use an alcoholic solution of bichloride of mercury, in the strength of two scruples of the latter to about six drachms or an ounce of the spirit. This is gently brushed over the part and blistering ensues; the hairs then become loosened the next day or so, and can be removed. The application causes pain, and should not be repeated, if it seem desirable, for some days. Another plan is to paint over the diseased patches Coster's paint—the iodine and tar beforementioned—and this may be done, say, two or three times, at intervals of four or five days, the black scab which forms being removed for the purpose.

But we should be on our guard against these remedies, if their use is followed by the appearance of many or the persistence of little pustular heads, or any pustular eruption, and I do not think they should, as the rule, be used to cases of tinea kerion or to tinea decalvans. But how are we to proceed in severe cases? Why, I believe that really satisfactory subsequent treatment must be based entirely on *microscopic* examination. So long as there are loosened and brittle hairs, or hairs loaded with fully-sized spores, we must use strong parasiticides, but with this caution, that we be on the look-out for the presence of much effusion or pus into the follicle, as evidenced by the masses which come away attached to the hair-shafts. It is also to be remembered, that whilst we may roughly guess the progress of the disease by the look of the hairs, for they will be inclined to grow straighter and more in their natural direction, and not in a twisted one, when less invaded than before with fungus, yet the microscope can alone tell us whether the fungus germs are still plentiful in follicle, and are being carried up through the papilla into the growing shaft. When we find, however, the hairs looking more healthy, and an attempt to form better roots and less fungus in the follicle, we must seize the moment just short of that time when "irritation" is about to occur and weaken our parasiticides. I am never disappointed with a weak bichloride of mercury ointment or the one used for itch—sulphur ʒ ss.; white precipitate ♏ vj.; creosote gutt. ij.; and lard an ounce. This should be rubbed in freely, and not smeared on to the spots; that is the secret of its success. So long as the microscope detects spores in the follicles or the hairs, so long should we continue it. Oftentimes, in severe cases, by the above plan of treatment, cases will last for only half the usual period. In tinea kerion, the milder forms of parasiticides, such as a lotion of sulphurous acid or the last-mentioned ointment, will rapidly aid the cure. In tinea decalvans, if the disease is acute and in rapid progress, I apply Coster's paint to the extended edge of disease, and for half an inch or so beyond its boundaries, and then use very freely an ointment of bichloride two or three grains to the ounce, extracting all short stumps of hairs, and whenever these appear I use the stronger parasiticide. When the progress of the disease stops, and young and new hairs appear, then a stimulating plan of treatment is called for. Sometimes the scalp gets puffy; the application of tincture of iodine every other day does good in these instances. In some old standing cases of tinea tonsurans the disease becomes reduced to two or three smallish spots about the crown of the head, and may be felt and seen according to the nurse's or parent's account as little "knotty" or "scurfy" places. On examination we find a little erythematous patch the size of a threepenny piece or more, scaly, or slight crusted, perhaps tender, and it may be showing one or more pustular heads. We may possibly detect, in some cases, short broken off hairs or the fungus elements; if so, we must simply epilate and use a strong ammonio-chloride of mercury ointment. But in other cases no trace of fungus can be seen, and these are they in which the yellow pustules are found. I have now seen many of them; they are instances of folliculitis, induced by the long-continued use of irritating applications, and only need to be let alone, save using some slight astringent, to get well. The treatment of secondary eruptions, eczema, pityriasis, and the like, must be conducted in the ordinary manner and baldness prevented, and the re-growth of the hair be encouraged by friction with some stimulant wash; in tinea decalvans, none is better than tincture of lytta six drachms, distilled vinegar ℥ iss., glycerine ʒ ij., tincture of nux vomica ℥ ss., and rose water to six ounces, to be used with friction night and morning. My chief object in running over the treatment of ringworms is to impress upon practitioners the paramount necessity of a constant appeal to microscopic appearances as the best guide to the effects produced by the use of parasiticides. It not unfrequently happens that the use of parasiticides is either not sufficiently pushed where the disease is making rapid progress, or is employed in cases where the results of the irritative action of parasiticides in the follicles are mistaken for a continuance or aggravation of the disease. Further, I wish to point out that we do not employ friction sufficiently in connexion with the applications we make of parasiticides.—*Practitioner*, *March*, 1870, *p*. 134.

66.—THE PATHOLOGICAL PHENOMENA ACCOMPANYING NEUROSIS OF THE SKIN.

By Erasmus Wilson, Esq., F. R. S.

[A lady 70 years of age, somewhat plump in person, and of healthy appearance, consulted Mr. Wilson on account of intense and increasing pruritus. The skin was well nourished and healthy in appearance with the exception of erythematous blotches, somewhat related to uticaria, hyperæmic papulæ, and scattered vesicles, ranging in size between one line and three.]

Looking to the diagnosis of this case, it was clear that it was one of neuralgia cutis, accompanied not only with the papulæ and peculiar stinging pains of prurigo, but also with the evanescent erythematous blotches of uticaria, and, besides these, with the vesicles of herpes. And there was pretty clear evidence presented of the mutual relations subsisting between prurigo, uticaria, and herpes, and of the dependence of these forms of disease upon disturbed innervation.

The medical history of the lady showed her to have been the victim of nervous debility for the greater part of her life. In her younger days she started at sudden sounds and sudden appearances; the movement of her cap-string would make her turn round in alarm, believing that some one was approaching her; and yet she has had and reared a numerous family. At one period she was confined to her bed for many months with an attack which seemed to be partly neuralgic and partly rheumatismal; and on another occasion it was thought necessary to administer morphia by subcutaneous injection for the relief of neuralgia. And although she states six months to have been the period of duration of the present attack, it has really been in existence in a less degree for two years.

With the preceding history of the patient's health before me, I prescribed citrate of iron and quinine; then, quinine with sulphate of magnesia in infusion of roses; next, liquor arsenicalis, at first in three and then in nine-minim doses three times in the day; afterwards two grains of quinine every two hours; together with bromide of potassium, hydrochlorate of ammonia, the compound soap pill with henbane, and liquor opii sedativus, twenty to thirty minims at bedtime, with thirty to sixty minims of tincture of henbane and one drachm of syrup of poppies; while, locally, she was anointed with zinc ointment and carbolic acid, and unguentum staphisagriæ; sponged with lotions and liniments of tar, and creosote; and emulsion of bitter almonds, with hydrocyanic acid. Lastly, upon a sudden aggravation of the symptoms, and under the torments of itching, the skin was painted with tincture of iodine, and with a solution of nitrate of silver in nitric ether, rising in strength from ten to fifteen grains to the ounce.

Like most neurotic affections, there were periods of comparative ease and periods of intense aggravation; and the general irritability of the whole system was greatly increased by nights of restlessness and perpetual stinging. On one occasion, when the pruritus in the legs, with blotches of papulous and tumescent erythema, and clusters of small bullæ, was more than ordinarily severe, I enveloped the limbs in waterproof lawn with temporary relief, but without any real benefit; and the treatment was succeeded by some degree of œdema, which continued for several days. But with this exception there has been no œdema of the integument, only a slight degree of swelling, originating probably in cell-distension.

Having in my mind a strong conviction of the neurotic seat of the disorder in this lady's case, and having failed to procure any relief from the already mentioned remedies, the liquor arsenicalis having disagreed with the stomach and requiring to be discontinued at the end of a few days, I determined to test the capabilities of large doses of quinine: ten grains were administered at bedtime, with seeming advantage; on the following day she took fifteen grains, and on the third day, twenty grains. On this latter day the pruritus had ceased, and she expressed a feeling of complete relief; but every now and then she experienced sharp, deep-seated, or, as she called them, stabbing pains in different parts of the body; and it seemed as though the cutaneous nerves were benumbed, but that the pathogenetic principle was still active in the deeper nerves. At this time she complained of severe pain in the occipital region, extending to the shoulder, and narrated the fact that she had suffered severely from occipital neuralgia of the opposite side of the head two years before. However, three days later erythematous blotches were seen on the skin, and it became evident that the occipital and humeral neuralgia was the precursor of herpes zoster, which occupied that portion of the integument supplied by the ascending and posterior descending branches of the cervical plexus. The ulcerations caused by the herpes were troublesome for several weeks, particularly on the patches situated upon the parietal bone and beneath the jaw; and the pain was wearing, and often intense. Besides the skin, she complained of pain inside the mouth, and of stiffness and pain of the side of the tongue.

We had now acquired a remedy, which I felt would control the pruritus whenever necessity required its use; and on several occasions I had the opportunity of putting it fairly to the test. I directed that ten grains of quinine should be given whenever the existing symptoms threatened a restless and sleepless night; and that it might also be given once additionally, and if necessary twice in the day. One day, when I paid her a visit, I found her very restless; twitching every now and then in her chair, jerking her shoulder or her head, and carrying her hand perpetually to some irritable spot of skin; I requested that she would take ten grains of her remedy instantly; and in a few seconds she was in a state of general repose and calm. It seemed possible to check the irritability of the nervous system in an instant, and that for the future, with ten grains of quinine as a part of her ordinary daily fare, or at hand when required, she might regard her nervous system as completely under her own control, and her cure as complete. But there was another side to this pleasant picture; there was the possibility of quinine, if used too frequently, losing its influence, and there was the fact that quinine had its inconveniences as well as its attractions. The first large dose, benumbing the auditory nerves, gave rise to deafness, which continued for some time, but, curiously, was not aggravated by successive large doses; then the remedy destroyed appetite, also probably on account of its benumbing effect on the pneumogastric nerves; and subsequently, and most important of all, it occasioned nausea and vomiting. Nevertheless, with all its faults, quinine has become indispensable to this lady, and although generally very much relieved from her neurotic symptoms, she is still obliged to take it from time to time.

I will now pass on to the consideration of another case, which I regard as *prurigo* complicated with eczema. The patient, aged 33, the wife of a physician, was introduced to me by her husband on the 30th of April, 1869. She was thin and pale, with a carriage which betokened lassitude and prostration, features contracted by exhaustion, and the hyperæmia of gutta rosea covering her nose. She complained of restless and sleepless nights, disturbed by pruritus and the exaltation of pruritus to the extent of nearly producing phrensy. At the hands of her husband and his friends she had run the gantlet of ordinary remedies and had pursued the orthodox methods without result. Nevertheless, I fancied that my ferro-arsenical drops might still be efficacious, and I prescribed them accordingly, ordering, locally, ablution of the irritable skin with the juniper-tar soap, and subsequent inunction of the oxide of zinc ointment in combination with the juniper tar. A fortnight later, it became necessary to stop the arsenic, and to prescribe an aperient. I selected that of sulphate of magnesia in infusion of roses, with quinine; and with the view of attacking the neuralgic element of the affection, I prescribed ten grains of quinine to be taken at bedtime every night.

On the 5th of June I was favoured by her husband with the following note, which records a brief history of her previous state, and of the results of the treatment:—"When my wife consulted you a short time ago she had been suffering for nearly a year, to the most intense degree, from itching arising from eczema of the anus and vulva. She had tried arsenic and various other remedies with occasional temporary relief. Under arsenic she improved, but was obliged, after a short time, to discontinue its use, in consequence of the intestinal irritation it excited. You, upon first seeing her, ordered arsenic in three-drop doses of Fowler's solution. After taking it for three weeks it began to irritate considerably, and the patient was not in the least better. You then ordered her to take ten grains of quinine in a wine-glass of sherry every night at bedtime. She took it for four successive nights, and then left it off, feeling herself comparatively well. Upon each occasion of taking it, in about ten minutes, she experienced a complete sense of relief, and a *delightful feeling of quiet and prostration.* She took at the same time the aperient mixture twice a day. About a fortnight has now elapsed since taking the last nightly dose of quinine, and she has hardly felt any itching since, and has had no severe attack. With many thanks for what appears to be on the eve of a complete cure, I remain, with very great gratitude," &c.

I may add to the above, that not only did the pruritis cease, but that, having ceased, the eczema took its departure spontaneously; appearing, as I believe to be the fact, to have been kept up by the neurodynic affection of the skin.—*Journal of Cutaneous Medicine, Jan.*, 1870, *p.* 455.

67.—ON THE TREATMENT OF CARBUNCLE.

By Dr. Peter Eade, Physician to the Norfolk and Norwich Hospital.

[Mr. Startin holds the opinion that boils and carbuncles are parasitic in their origin. This opinion is rather borne out by the success attending treatment founded upon the assumption of its truth, than upon actual microscopic observation. Dr. Eade introduces into every possible portion of the mass a strong solution of carbolic acid.]

J. P., aged 74, a remarkably hale, stout, and robust man of his age, free from other bodily disease, although the subject of chronic mania, was attacked about Sept. 24th with carbuncle of the back of the neck. It began, as usual, as a small inflamed and thickened spot, and the central thickening and circumferential redness gradually increased, with about the usual amount of pain and constitutional irritation. On Sept. 28th, four days after the commencement, being then about three inches in diameter, a free crucial incision was made across it, and then poultices of linseed meal were constantly applied; but it continued steadily to enlarge. Five days later, its progress being still quite unchecked, and its diameter having considerably increased, it was again freely divided crucially; and next day—the cut portions of the carbuncle, as well as its numerous small openings, having begun to discharge dirty pus and small strings of sloughy tissue—the poultices were omitted, and it was covered all over with lint saturated with oil containing one part to five of carbolic acid, at the same time that strips of lint soaked in the same were laid in the fossæ formed by the division of the diseased mass, and were also freely inserted into all the natural openings which had formed in it, all being renewed at intervals of a few hours. At the end of two days a very remarkable change was observed. All the internal parts of the tumour with which the carbolic acid had come in contact had lost their bluish and dirty-sloughy appearance, and had now a remarkably red and florid look, with fresh granulations rapidly springing up in them; and the tumour had evidently ceased to spread on the right side, which was in reality, the one where the small openings were most numerous, nearest to which the incisions had been made, and where, consequently, the carbolic oil had been most completely and thoroughly applied. As the left side, however, still continued to extend, and as this spreading appeared to be but little, if at all, checked by the incisions, a deep eschar of two inches' diameter was now (Oct. 6th) made near its outer edge with acid nitrate of mercury, the carbolic oil applied as before, and the whole covered (as advised by Mr. Startin) with a poultice smeared with mercurial ointment. After this the carbuncle, which had now attained a diameter of several inches, and in fact almost covered the entire surface of the back of the neck, ceased to spread; the circumferential redness subsided; the solid centre passed through its stage of boggy softening quickly, and with a small amount of suppuration; only a few very small pieces of core or slough were discharged; and in a few days the soreness and swelling were nearly gone, the patient was eating voraciously, and was in fact well. He was throughout supported fully as possible by liquid food and a large supply of stimulants, but not much medicine was taken. During the course of the treatment several small festers or incipient boils appeared around the margin of the carbuncle, but they were all completely aborted by the free application of the acid caustic to their apices.

In considering this case, two points appear to me to be worthy of notice.

1. The great age of the patient, and the large size of the tumour; in spite of which recovery took place.

2. The influence of the treatment adopted in producing the favourable result.

On the first point I would only say that, though doubtless many aged patients do survive an attack of carbuncle, even when as extensive as this one, yet that the rule is the other way, and that a carbuncle of any great size in an elderly patient must always be looked upon as a most formidable disease; whilst the danger must be proportionably increased when, as in this case, it covers the whole of a broad *nucha*, or when the patient has attained so advanced an age as seventy-four years.

On the second point, I would express the opinion (shared both by Mr. Nichols and Mr. Watson, who watched the case with me) that the carbolic acid had a marked effect in checking the spread of the carbuncular growth wherever it was, and could be, applied *beneath* the skin, at the same time that the inflammation and swelling continued to spread rapidly on the side where the acid could not be so applied. But, independently of any such opinion, it is quite certain that its application produced a speedy and marked effect on the appearance of the sloughing tissue. Pale, flabby, and sloughy cellular tissue became quickly covered with new, red, and even florid granulations; the amount of suppuration was much diminished, and throughout a much smaller quantity than usual of shreds of slough were discharged; whilst the diseased skin, when its spread was once arrested, appeared to regain with great rapidity its natural level, colour, and consistency.

The effect of the caustic in checking the increase of the little angry festers which formed below the tumour, where the discharge had run down upon healthy skin, was most immediate and remarkable.—*Lancet, Dec.* 11, 1869, *p.* 800.

68.—PSORIASIS; ITS TREATMENT BY CARBOLIC ACID.

By Dr. John M'Nab, Loch Inver.

In the healthy state, the corion, or outer surface of the cutis vera, is incessantly secreting a semi-fluid viscid substance, which afterwards becomes dry and semi-transparent, and is constantly thrown off in the form of small, thin, amorphous scales, to be replaced by others of the same kind in regular and uninterrupted succession. This secretion is ascertained by the appropriate chemical tests to be of an albuminous nature, and when the secreting surface of corion becomes inflamed, or otherwise disordered, its functions are no longer performed in the same uniform and regular manner, but under special abnormal conditions which constitute the disease in question. Dr. Aitken, one of the most recent and most comprehensive writers on the science and practice of medicine, describes psoriasis as "characterised by the development of irregularly-formed patches slightly raised above the level of the skin, and covered with thin, dry, white scales. The patches may be distinct, small, and scattered, or larger, confounded together, and irregular; or they may be so extended as to make a continuous surface. Hence the names of the varieties of psoriasis. The intense itchiness and the eruption is always preceded by that form of dyspepsia or impaired digestion in which there is a superabundance of acidity, much formation of lithates, and an obvious constitutional tendency to gout."

' In this description we readily acquiesce, and further regard the disease essentially as the local manifestation of a special depraved condition of the system, induced by derangement of the organic functions, and as such requiring for its cure special local and general therapeutic agents. Every morbid state of the secreting surface of the corion gives rise to corresponding morbid secretions, thus constituting an unnatural condition of the cuticle or scarf-skin; and, conversely, every diseased or abnormal state of the cuticle results from, and originally depends upon, an abnormal state of the cuticular or secreting surface of the cutis vera. In psoriasis, as a general rule, this morbid condition consists of a generic inflammation, more or less circumscribed according to the species of the disease presented, and the inflammation, by whatever means induced, may be regarded as the primary cause of this morbid and altered secretion; and although the secretion remains essentially the same after the inflammatory action has abated, it—now in the form of scaly incrustations—is nevertheless due to it. The secreting surface of the corion has now assumed a pathological function instead of a physiological one, and continues to exercise this function until corrected by external and other appropriate remedies; and it is in correcting and restoring this perverted function that the indications of cure really lie. It is essential, however, that attention be directed to the disease as recognised by its local manifestations. The inflammatory process, with which it is always ushered in, so alters the part affected as to require certain local applications to restore it to its original functional activity; and it is in this respect that we find carbolic acid acts such an important part in the treatment.

Shortly after the publication of Professor Lister's observations and experiments on the antiseptic method of treating wounds, it occurred to me that carbolic acid, applied in the form of ointment to the parts affected with psoriasis, might be of service in curing the disease; and a consideration of the close resemblance subsisting between itself and other carbo-hydrogen compounds of recognised value in the treatment of the disease rendered the idea highly probable; and, having a number of old-standing cases under my care at the time, I resolved to give the remedy a fair trial. Accordingly, I began by applying it in a case of inveterate psoriasis that had hitherto baffled all attempts at a permanent cure by the ordinary means, and found that, after continuing the treatment for some time, the scales began to fall off, the process of desquamation was retarded, and the skin began to assume a healthier aspect. At this stage of the process the carbolic acid application was discontinued, and the oxide-of-zinc ointment substituted for a short time, when a complete cure was subsequently effected. I have had under my care a number of obstinate cases of psoriasis since, and have been successful in treating them all by carbolic acid, combined with the internal administration of liquor arsenicalis and the other necessary means for obviating the general predisposition to the disease.

The curative properties of carbolic acid being once established by practical experience, it becomes a subject of interest and scientific importance to determine its method of cure, or its *modus operandi.* This consists chiefly in acting chemically on the organic compounds of the parts affected. It coagulates the albuminous secretion of which the disease essentially consists, and renders the diseased part more compressed, and less liable to the process of exudation peculiar to this morbid state. It neutralizes the effects of the oxygen of the atmospheric air on the affected part by entering into chemical combination with it, and thus obviates any local action the oxygen of the air might induce. This is apparent from the remarkably high percentage of carbon it contains, for according to Laurent, the formula of carbolic acid is $(C_{12}\ H_5)\ O,\ HO$, or the hydrated oxide of phenyle; and we cannot doubt that other bodies belonging to the same series, possess similar therapeutic properties. We do not claim for carbolic acid, or any of its congeners, any special or specific curative influence independent and apart from constitutional treatment; for, in the light of our pathology, it is apparent that constitutional symptoms must be met by the appropriate constitutional remedies. But in a large number of cases the disease depends upon constitutional causes that have been remedied, that are no longer in operation, that have now become passive, but have left behind a depraved state of the skin sufficient to perpetuate the disease indefinitely, irrespective of all constitutional causes.

In such cases the local application of carbolic acid ointment will be productive of the greatest benefit. The ointment ought to consist of *one* part by weight of the acid to *four* of common lard, melted down and mixed, and afterwards allowed to cool. It ought to be applied every night at bed-time with gutta-percha tissue covering, to prevent evaporation, and this should be continued until the scales disappear, and the skin begins to assume a smoother and healthier aspect. The oxide-of-zinc ointment is now to be substituted, and continued until a complete cure takes place. The utility of applying the oxide of zinc afterwards depends solely on its astringent effects, and keeping the parts moist, and excluding the atmospheric air. The organic functions must, as we have observed, be duly regulated, and the effete products eliminated through the emunctories; but the specific local inflammation, which is the generic character of the disease, is more amenable to the direct curative influence of carbolic acid than to any other therapeutic agent with which we are acquainted, and will be found to form a valuable addition to the materia medica of the dermatologist.—*Lancet, March* 19, 1870, *p.* 408.

69.—PATHOLOGY OF ALOPECIA AREATA.

Professor RINDFLEISCH of Bonn contributes a paper on this subject to the *Archiv für Dermatologie und Syphilis.* He starts with the assumption that the Microsporon Audouini has been proved by Pincus and others to be a myth, and that the parasitic nature of the disease has been inferred from the analogies which its development and clinical characters present to those of truly parasitic dermatoses. He proceeds to show that its characteristic features may be accounted for in a different way. It has long been noted that the margins of the affected patch in alopecia areata are devoid of those broken hairs which are conspicuous in tinea tonsurans; also, that there is a general thinning of the hair over the whole scalp. The former peculiarity is accounted for by the solution of continuity in the case of each individual hair taking place at the junction of the lower and middle thirds of its intrafollicular portion. The latter suggests that the operation of the morbific cause is not confined to the bald patches. A temporary malnutrition of the root of the hairs suffice to explain everything. Each hair, in emerging from its follicle, has to overcome a certain amount of resistance offered by the superficial layers of its sheath. Under normal conditions, the continuous cell-proliferation at the root supplies the needful *vis à tergo.* If this, however, undergo a temporary check, the hair ceases to advance, and the opposed surfaces of hair and sheath become adherent. Just below this point is the atrophied tract of the hair. When any such hair is pulled, therefore, it breaks at the bottom of its follicle, and carries with it a considerable part of its sheath. The causes of the malnutrition are to be sought in some influence brought to bear upon the trophic nerves. Sudden cooling of a perspiring scalp has been known to precede alopecia areata. Treatment based on these considerations has proved successful. A lotion consisting of equal parts of tincture of capsicum and glycerine is applied to the affected area; the former ingredient with a view to stimulate nutrition and promote the growth of new hairs; the latter, to soften the adhesion between the hair and its sheath, and so to facilitate its extrusion.—*British Medical Journal, March* 19, 1870, *p.* 290.

70.—GLYCERATE OF TAR IN SKIN DISEASES.

The excellent effects of tar in skin diseases leads us to call attention to the elegant preparation called glycerate of tar. Its preparation is thus described by *Mr. J. B. Moore*, in the *American Journal of Pharmacy* :—

Glycerine seems to be a good solvent of the medicinal properties of tar, and possessing demulcent, alterative, and nutrient properties, serves as a valuable adjunct to the latter therapeutically.

I will now present the formula which I have adopted, after repeated trials, as the most desirable for the manufacture of this preparation :—

℞. Picis liquidæ (strained), ℥j. troy; magnesiæ carb. (rubbed to powder on a sieve), ℥iij.; alcoholis, ℥ij.; glycerin, ℥iv.; aquæ, quantum sufficit.

Mix the alcohol and glycerine with ten fluid ounces of water. Rub the tar in a mortar, first with the carb. magnesia gradually added, until a smooth pulverulent mixture is obtained; then gradually add, in small portions at a time, with thorough trituration continued for fifteen or twenty minutes, six fluid ounces of the mixture of alcohol, glycerine, and water, and strain, with strong expression; return the residue to the mortar, and repeat the trituration as before, with five fluid ounces more of the same liquid, and express; again treat the dregs in the same manner with the remainder of the menstruum, and after expression reduce the residue by trituration to a uniform condition, and finally pack firmly in a glass funnel prepared for percolation, and pour upon it the expressed liquors, previously mixed, and when the mixture has all passed from the surface continue the percolation with water until one pint of the liquid has been obtained.

When first prepared, the "glycerate" is of a beautiful rich reddish-brown colour. After a short time it loses, in a measure, its transparency, in consequence of a separation of *inert* pitchy matter. But its pristine beauty may be easily restored by filtration, which is accomplished in a few minutes, as it passes the filter very rapidly. This deposit of resinous matter continues for a considerable lapse of time, but does not diminish or impair in the slightest degree the medicinal virtues of the preparation, but simply temporarily mars its beauty.

It possesses in a high degree all the sensible properties of tar. In this they are more strongly marked than in any preparation of tar, excepting the tincture, I have seen.

In conjunction with the fluid extract of wild-cherry bark, acetate, or syr. squills, syrups of guinaria, lactunas carium, &c., in varied proportions to suit the views of the prescriber, it will form elegant and palatable combinations, which will be peculiarly adapted to the treatment of chronic coughs, and the various diseases of the pulmonary organs.

Each fluid ounce of the glycerate, if the process has been carefully managed, will represent about thirty grains of tar, the dose of which is from a dessert to a tablespoonful.

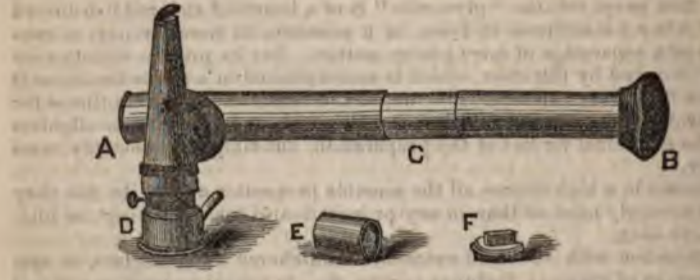
The glycerate may be made, and I think almost equally well, without alcohol, by replacing that liquid with glycerine. When made in this way, the preparation deposits less resinous matter, as glycerine takes up less of that substance, yet the odour and taste of the tar is nearly as strong as when alcohol is employed in its manufacture.—*Medical Press and Circular, Dec.* 29, 1869, *p.* 526.

AFFECTIONS OF THE EYE.

71.—DR. BEALE'S SELF-ILLUMINATING OPHTHALMOSCOPE.

The structure of this instrument, which has been devised by Dr. Lionel Beale, F.R.S., Physician to King's College Hospital, can be explained in a few words by aid of the accompanying figure. A is a simple brass telescope tube, about an inch in diameter, to the side of which the little lamp D is fixed; C is another tube upon which slides the first tube A, and which also carries a tube with a piece of wood fitted to the end, which is shaped to the margin of the orbit B; the inner tube C contains the reflector and the ophthalmoscope lens; D is the paraffin lamp, and is similar to the lamp used in Dr. Beale's demonstrating microscope; E is a second ophthalmoscope lens of a higher magnifying power; F is the plug which is screwed into the lamp, D, when it is removed from the instrument and placed in the case for packing.

The ophthalmoscope can be held in the hand, or it may be mounted upon a stem or tripod stand. It can be used in any room *in full day-light* or *when lamps are lighted. This arrangement entirely obviates the necessity of the dark room for ophthalmoscopic observations.* The eyes may be examined when the patient is in the recumbent posture as well as when sitting or standing, and in many cases without using atropine. When an observation is to be made, the observer should request the patient to direct the other eye so that he may see distinctly some object on a wall from eight to ten feet distant, as a spot in the pattern of the paper, or a red wafer or piece of sealing-wax placed there for the purpose, about one foot higher than the level of the eye of the patient. The patient should be told to look, now a little above or below, to the right or to the left of this mark, until the optic disc, with the vessels, comes well into view; in many instances this will be immediately. The reason for preferring a distant object to a near one (as a ball attached to the end of a bar connected with the ophthalmoscope itself) is, that the pupil dilates, while it will contract if a near object be selected; and, by reason of its smallness, a good view of the disc cannot be obtained without the previous use of atropine.



Focussing.—The end tube (which carries the wooden shield B to be applied to the orbit of the patient) may be moved backwards and forwards until the right focus for the retina has been found. If a mark be made on the tube, the rough focus can be quickly obtained on all subsequent occasions, and the exact adjustment then made for the individual eye under examination, by screwing the tube about the eighth or the quarter of an inch from, or towards the observer. In order that the distance between the magnifying lens and the reflector may be altered, a considerable length of inner tube, C, has been provided, and the image formed may be increased or diminished at pleasure.

Ophthalmoscope lenses, E, of different magnifying powers, can be supplied; each being fixed in a tube, which slides readily into the place made for its reception. Each lens is so mounted that it may be turned upon an axis, in order that the reflections of the reflector upon its anterior and posterior surfaces, which would much interfere with the distinctness of the image of the retina, may be readily thrown out of the field of vision. This object is effected if the lens be thrown less than a quarter of an inch out of the plane.

Spectacle lenses can be fitted to the eye-piece if required.

Of the lamp.—In order to light the lamp, it has but to be removed from the axis on which it revolves. The wick is then turned up a little, lighted, and immediately lowered, when the lamp is returned to its plane, and the wick adjusted so as to give the brightest light possible without smoke. Only the best paraffin should be used for these lamps, and if it be nearly saturated with camphor its illuminating property will be much improved. The intensity of the illumination will be further increased if a white surface of porcelain be placed behind the light. The same object is fulfilled by covering a portion of the inner surface of the metal chimney with a thin coating of plaster of Paris or whiting. The plane surface of the bull's-eye condenser towards the lamp requires to be carefully wiped occasionally, as the vapour from the paraffin lamp condenses upon it. Before the instrument is replaced in its case, the paraffin reservoir is to be unscrewed, and its brass stopper well screwed down. In this way the escape of paraffin is effectually provided against.

The ophthalmoscope may be inclined at any angle if the lamp be rotated on its moveable axis a little, for it must be kept perpendicular in all positions of the instrument.

The observer may employ either his right or left eye as he desires, the position of the lamp being altered by turning it round.

These ophthalmoscopes are made by Mr. T. Hawksley, 4, Blenheim Street, Bond Street, London. The instrument, with lamp, reservoir, and two lenses of 2½ and 3 inches focus respectively, arranged in a mahogany case complete, costs two guineas. Extra lenses and other apparatus for the ear, bladder, throat, etc., can be supplied if required. Each instrument is tried and carefully examined by Mr. Hawksley before being sold.—*British Medical Journal, April* 2, 1870, *p.* 336.

72.—FLEXIBLE LACHRYMAL PROBES.

Dr. Williams, of Boston (Trans. of the Amer. Ophth. Soc., 1869), exhibited to the society a set of flexible probes for the lachrymal passages. He thinks that Bowman's probes, if not bent so as precisely to correspond with the direction of the duct in the individual operated upon, often lacerate the mucous lining of the passages, causing pain and hemorrhage, and retarding the cure by causing local inflammation. He has found in practice that his flexible probes adapt themselves to the sinuosities of the passages, can be introduced with more facility and less pain, and are less likely to take a wrong direction. They have bulbous extremities, of the sizes of Bowman's series, but are slender for one third of the distance from the bulb to the flat disc in the middle. They are of alloyed silver, and have an elastic flexibility without being liable to bend upon themselves in encountering obstructions, as would be the case if the silver were pure.—*Ophthalmic Hospital Reports, Nov.*, 1869, *p.* 310.

73.—LEADEN STYLES FOR LACHRYMAL PASSAGES.

Dr. John Green, of St. Louis, has contributed to the Trans. of the Amer. Ophth. Soc., 1869, a paper on the use of leaden styles in the treatment of disease of the lachrymal sac. He says: "Metallic styles, worn for a longer or shorter time in the lachrymal sac and nasal duct, have long been used in the treatment of obstructions of those passages. Of modern surgeons, Dr. E. Williams, of Cincinnati, has employed this method with the greatest success. He uses styles of about eight sizes, ranging from ·035 to ·12 inch, or from the size of No. 3 of Mr. Bowman's series to a diameter of about double that of No. 6. The styles are of silver, and are introduced through an opening into the lachrymal sac made by slitting up the upper canaliculus with a fine pair of scissors. He begins with a style as large as can easily be inserted, changing to larger sizes as fast as the state of the parts will permit. During the whole course of the treatment the style is frequently removed, and the sac and duct treated by astringent injections. The results are extremely satisfactory, both as regards the time required and the ease and certainty with which the case is conducted to a successful issue, and the method is especially adapted for the worst forms of obstruction, such as traumatic or complicated cases. Experience has shewn, however, that it is necessary to use styles of large diameter, in order to guard against relapse. This seems to arise in part from the silver styles being too rigid to accommodate themselves to the direction of the duct, so that they exert unequal pressure on its bony walls. The style, instead of lying loosely in the middle of the canal, is, in fact, making constant pressure upon a few points, so that it tends to produce ulceration of the lining membrane, and partial absorption and ultimate change of form of the bony walls. The canal must, in short, be brought into the form of a strictly cylindrical tube before the style can begin to distend it uniformly, and to exert that equable pressure upon the mucous membrane that is essential to its beneficial action. Reflecting upon the mode in which the curative effect of the styles was attained, the writer was led to the conclusion that the period of treatment might be materially abridged, with increased comfort to the patient, by the substitution of flexible styles of lead for the rigid ones of silver. The experiment was tried upon a very unpromising traumatic case, complicated with abscess of the sac, and with a result so gratifying as to lead to other trials which have all proved highly satisfactory. The apparent advantages of the method are briefly these:—

1. The leaden styles with the maximum degree of comfort, and with the minimum degree of risk from unequal pressure.

2. Under their use the discharge from the sac soon becomes mucous and rapidly disappears, without medication of the sac by syringing or otherwise.

3. A less degree of dilatation, by the use of a smaller size of style, answers for the completion of the cure, thus enabling us materially to abridge the period of treatment.

4. The toleration of the style and the favourable progress of the cure without further treatment, enable us, in certain cases, to dispense with the assiduous attention which is so essential with other methods. The plan works particularly well, therefore, in cases, where patients are irregular in attendance, and where, for any reason, but a short time can be spared for treatment.

The styles used have been made from the purest and softest lead drawn into wire, of sizes ranging from one to two millimetres ($\frac{1}{24}$th to $\frac{1}{12}$th of an inch) in diameter. These sizes correspond in the lower numbers to Nos. 4 to 6 of Mr. Bowman's probes. In the larger sizes the maximum (No. 6) of Mr. Bowman in the ratio of 2 to 1·3. They are smaller than the maximum sizes used by Dr. Williams, in the ratio of 2 to 2·9; and they are probably smaller also than the largest styles which he commonly employs. Larger sizes, ranging from two to three millimetres in diameter, have not as yet seemed to be needed.

To make the styles from the leaden wire, it is cut into lengths of two inches for the upper canaliculus; if intended to be passed by the way of the lower canaliculus, they should be about a quarter of an inch shorter. One end of the style is carefully rounded with a penknife, and smoothed by scraping. They are made perfectly straight, as they are more easily introduced in this form: the upper end is bent over into a hooked form by means of forceps, after the style is placed in position. The smaller sizes are introduced with great difficulty, unless a way has been prepared for them by wearing a rigid style of silver for a few hours, or perhaps for a day or two. After this there is no further trouble in exchanging the old style for the next larger, provided only that we take care to introduce the new one immediately upon the withdrawal of the old. The largest sizes (of from two to three millimetres in diameter) if used, will be found rather heavy, they should therefore be drawn in the form of tubes, instead of solid wire. The smaller sizes might also per haps be made tubular, and their introduction facilitated by passing a fin steel wire into the cavity. Where elegance is an object, the styles may b easily silvered or gilt.—*Ophthalmic Hospital Reports, Nov.*, 1869, *p.* 310.

74.—ON AN IMPROVED METHOD OF EXTRACTING IN CASES CATARACT.

By Dr. Charles Bell Taylor, Surgeon to the Nottingham and Midland Eye Infirmary.

[Dr. Taylor has on several previous occasions published cases of cataract i *trating* the mode of operating followed by him. The following article *a resumé of* the whole, and fully describes the operation.]

The instruments that I employ are a pair of sharp forceps that pierce the sclerotic, a very light speculum (a modification of Von Graefe's), and two knives, a line in width, and bent at an angle similar to the ordinary iridectomy knives, one with a sharp point, and the other with a blunt or bulbous extremity.

As the danger, even if vomiting occurs, is very slight with the form of incision I am about to describe, I usually prefer to have the patient narcotised, and, as a rule, push the chloroform to full anæsthesia. The lids should then be kept apart by the speculum, and the globe gently depressed with a pair of ordinary forceps in the operator's right hand. Having got the eye into a favourable position, it should be fixed by the sharp forceps at about the junction of the upper with the middle third of the cornea. The pointed knife is then entered in the cornea-sclerotic junction, one or two lines from the forceps, at the summit of the cornea, pushed well into the anterior chamber, and, with a gentle sawing motion, the eye being steadied with the left hand, carried along the summit, a distance of three lines. The aqueous will now escape, and if we wish to extract without iridectomy, or if the condition of the globe before and after incision, as regards tension, is such that we have reason to fear excessive bleeding from excision of a portion of iris, it will be well at this stage to open the capsule carefully in its central and lower segments, a proceeding very much facilitated by the small size of the wound, the safety with which the globe may be manipulated, and a previously dilated pupil. If the cornea remains firm, if the lens is readily loosened on incision of the capsule, if the patient is perfectly quiescent, shows no tendency to vomit, and other circumstances prove favourable, we may extract without iridectomy, in which case it will be simply necessary to enlarge the wound in the manner hereafter to be described.

If, from the nature of the case, we have decided on associating an iridectomy with the extraction, and desire to derive the advantages of an iridectomy, so far as tension is concerned, the iris forceps should now be introduced into the wound, the blades opened, and the iris seized near to its pupillary border, drawn out, and divided at the right-hand angle of the incision, carried over and excised at the left as in iridectomy for glaucoma. If, however, tension is quite normal, and the removal of a portion of iris is not likely to have a favourable influence on the after-progress of the case, a very small incision, or the merest slit in the constrictor fibres of the iris, will suffice to reduce the risk from bruising to a minimum, and still to some extent preserve the advantages of a natural pupil. If we have not found it necessary to open the capsule prior to iridectomy, it should now be rendered tense and carefully incised with the ordinary cystotome, the stem of which it as well to have made either of platinum or of soft steel; so that it may be bent in accordance with the projection of the patient's brow, or relative position of the eyeball. Having opened the capsule, and slightly loosened the lens, the eye should be seized to the right of the globe with a pair of ordinary forceps, and the wound enlarged to the left with the blunt-pointed knife (encroaching slightly upon the sclerotic) to an extent that experience tells us will, with a similar wound to the right, suffice for the ready exit of the lens; fixing the eye then with the left hand, the process must be repeated to the right. The incision is thus localised in a definite line, and its extent at any period of the operation is only limited by the will of the operator.

If the iris has been left intact, a comparatively large flap will be required, but if iridectomy has either preceded or is associated with the extraction, a very small shallow flap will suffice, one which yields readily to the advancing lens, while it is sufficiently slit-like and elastic to close without artificial apposition or external support, strong enough to resist protrusion by advancing vitreous, and too resilient to permit of accidental reflection.

The lens may now be extruded by slight pressure upon the globe, without passing any instrument into the eye, cortical fragments removed with ease, and any portion of capsule or lens matter likely to obstruct vision, be either torn across or removed with the sharp hook, canula forceps, or sucker.

If, from the existence of firm adhesions, the lens cannot be started by pressure, it should be dipped out with the wire-loop spoon, an instrument which from its extreme tenuity assists the exit of the cataract without adding to its bulk.

If it is desirable to extract by the lower section, the same form of incision may be employed, and this is preferable in a few cases where the lens is superficially softened, as any pulpy cortical matter left behind in the eye will gravitate to the bottom of the anterior chamber, pass harmlessly through the coloboma iridis, and either undergo absorption, or be washed out with the aqueous. The risk of its lodging behind the lower segment of iris and setting up subsequent irritation is thus avoided, but the section is less sheltered, and the coloboma uglier and more disturbing to vision.

The operation completed, I apply a drop of solution of atropine in the corner of the eye, and cover the lids with a pad of fine cotton wool, dipped in, but not saturated with cold water. If sodden, the pad is heavy, irregular, unmanageable; but just moistened on the surface, it fits accurately into the orbital cavity, and speedily dries into a smooth film, closely bedded to the surface of the lids, absorbing moisture, insuring equable support, a regular temperature, and the exclusion of light. It must be secured *in situ*, with gentle pressure, by thin strips of soap plaster, spread on unglazed calico (which adheres without warming). I find this by far the best dressing. Pressure can be accurately applied by strips fixed to the forehead and cheek, and, if necessary, by an additional broad strap passed from temple to temple. Any kind of compress bandage may also, if required, be readily applied over the pads and plaster. Inflammatory or other complications coming on after the operation must be treated on general principles, such, however, very seldom occur; rest on the couch for forty-eight hours in a partially darkened room, and confinement for a week, being, as a rule, all the after-treatment required.

In adopting this operation, the operator may use the right hand for either eye, so that there is no necessity for ambi-dexterity, and no risk of that increased fatality, which, from the greater difficulties of execution, has hitherto attended operations on the left eye. Up to the last moment, or indeed until success is almost certain, we are not committed to any special form of operation; it is in our power, in the interest of the patient, and with perfect safety, to delay, abandon, or modify the operation, as the exigencies of the moment may demand, or unforeseen circumstances require. With an incision three lines only in extent, we are in a position to handle the globe with impunity, while, should any accident occur, such as rupture of the hyaloid, prolapse of vitreous, recession of the cataract, hemorrhage into the anterior chamber, vomiting or other alarming symptom from chloroform, we may meet these complications with the utmost calmness and deliberation, knowing that the safety of the patient is secured. The protruding vitreous may be clipped off, a suture may be applied, blood sucked out of the chamber, the wound slightly enlarged, or the lens dipped out with the wire spoon; or what is sometimes better, we may safely delay the extraction by making the iridectomy a preliminary rather than a part of the operation; and, utilising the experience we have gained of the patient's peculiarities, the state of the eyeball and condition of the lens to the benefit of both patient and operator when extracting some six weeks later. Should, on the contrary, all go well, we may aim at the maximum of success, and enlarge the wound sufficiently to permit the exit of the lens without an iridectomy, and this, the wound being localised with such extreme precision, and well back in the corneo-sclerotic junction, may be accomplished with an incision decidedly smaller than the one required in the old flap operation. It is easy to see whether the section is large enough, if the lens is previously loosened, and we may thus in some cases attain, either with or without the aid of the wire spoon, that highest indication of success,—a central and moveable pupil. Short of this also, we may make the iridectomy a mere slit or simple division of the constrictor fibres of the pupil, leaving the ciliary margin untouched, sufficient to permit of the exit of the lens with a minimum amount of bruising, and thus preserve, though to a less degree, the advantages of a natural pupil. If, in the extraction, without iridectomy, the iris should prolapse, the comparatively small size of the wound, and the greater firmness of the flap will permit of our safely replacing it, as well as of coaxing out any cortical débris that may have floated into the pupillary space. It will thus be seen that the greater portion of the operation is completed with a wound so small, that the occurrence of any accident, so far from finding the operator, as in the old flap method, utterly powerless, need not cause either danger, embarrassment, or delay. By performing the iridectomy and laceration of the capsule through a wound only three lines in extent, we preserve the effect of atropine upon the pupil, if not fully, at least to a great extent, and facility of manipulation with an enlarged pupil renders laceration of the capsule a matter of great ease and certainty, and not a mere flourish, to which the difficulties and danger attending the flap method have frequently reduced this portion of the operation.

In the old method, when the aqueous is gone, the cornea wrinkled, and the eyeball collapsed, it is difficult, especially in some lights, such as we are often obliged to put up with in operating, to see the exact position of parts. The complete evacuation of the aqueous occasioned by the large size of the wound, and the irritation of the iris causes the pupil to contract, it would not be safe to render the capsule tense, and its efficient laceration, which would afford so much facility for the subsequent removal of the lens, becomes a matter of difficulty and danger when the tissues are collapsed, and offer no resistance to the pricker. With a three-line incision, on the contrary, such as I have described, the relative position of parts is much better preserved. The aqueous is not so completely evacuated, irritation of the iris is not so great as to cause more than partial contraction of the previously dilated pupil. Wrinkling of the cornea does not obscure the operator's vision, and the capsule is consequently safely, and much more easily rendered tense, and incised to the requisite extent.

Of course the greatest advantage is the greater certainty of success, and (especially in old people) the slight after-treatment required. It is necessary in infirmary practice to operate upon so many worn-out marasmic individuals, that a fortunate issue in a majority of such patients must plead strongly in favour of any method that has been successfully adopted in like cases.—*Ophthalmic Hospital Reports, April*, 1869, *p.* 197.

75.—ON SENILE CATARACT.

By J. Soelberg Wells, Esq., Professor of Ophthalmology in King's College, Ophthalmic Surgeon to King's College Hospital, &c.

[In the following article Mr. Wells draws attention to a few points of practical importance with regard to the subject of cataract, to which he believes sufficient importance is not always attached.]

The patient (J. C., aged 59) is a woman in good health, who is suffering from cataract in both eyes, but in different degree, for in the right eye it is ripe or mature, whereas in the left it is still immature. A glance at the two eyes at once reveals the difference. In the right eye, the pupil is occupied by a yellowish white opacity, which reaches close up to the margin of the pupil; whereas in the left eye a superficial observer might easily altogether overlook the presence of cataract, for, as the anterior portions of the lens are still transparent, the opacity is only of a greyish tint, a few grey spiculæ traversing the pupillary area. But with the oblique illumination* the existence of a cataract becomes very evident, the opacity being especially marked at the posterior part of the lens and at the periphery. With this eye she is still able to decipher words of large print (No. 16 of Jaeger's test-types), but with the right she can only see the movements of a hand.

Now, what is meant by the term "ripeness of a cataract"? and why is it of importance with regard to an operation? A cataract is called ripe when the whole lens is opaque, so that the opacity reaches quite up to the pupil, and the edge of the latter does not throw a shadow on the anterior portion of the lens. Moreover in such a case the sight is so much impaired that the patient is only able to see the movements of the hand, or of some large object, but is not able to count fingers. If he is still able to do the latter at the distance of a foot or two, or is able to decipher letters of large print, we know at once that some portions of the cortical substance are still transparent. A ripe senile cataract affords the best prognosis of the result of an operation, for the lens will then probably come out *en masse;* whereas if a considerable portion of the surface matter is still transparent and soft, it separates from the hard central part, and remains behind the iris or in the pupil, and, swelling up, may give rise to a good deal of irritation and even inflammation, or to a dense secondary cataract. Let us now briefly consider the following questions with regard to our patient:—1. Are both eyes to be operated upon? 2. Is the condition of the eyes favourable? 3. What operation is to be performed?

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* This mode of examination is thus conducted:—A lamp being placed somewhat in front and to one side of the patient, at a distance of from two to two and a half feet, and on a level with his eye, the light is concentrated on the cornea or crystalline lens by a strong convex lens of two or three inches focus.

1. Although she has still sufficient sight in her left eye to with difficulty find her way about in a place which she knows, she cannot guide herself in the street, nor employ herself in any household duties. Yet, as the cataract is still immature in this eye, it is advisable only to operate at present on the right eye. As a rule, if only one eye is blind with senile cataract, we generally defer an operation while the sight of the other eye is still good. But in younger persons the personal appearance may come into play, and in children the sensibility of the retina of the cataractous eye is very apt to become greatly impaired from prolonged disuse. But even if the cataract is mature in both eyes, I do not think it safe to operate upon both at the same time, because unsuspected peculiarities in the constitution or temperament may manifest themselves during the after-treatment, a prior knowledge of which may prove of great value in the operation on the second eye, and lead us perhaps to select some other mode of operation for this. But individual circumstances must guide us in deciding on this point.

2. Does the condition of the right eye afford a good prognosis as to the result of the operation? Apparently we may at once answer this question in the affirmative, for the external appearance of the eye is quite healthy, the pupil is active, and the patient can see the shadow of a hand moving in front of this eye. But this is not sufficient, and before deciding upon the prognosis, we must also examine the degree of tension of the eyeball, the amount of perception of light, and the state of the field of vision. Inattention to the last two points sometimes leads to the unfortunate and reprehensible error of submitting to an operation a perfectly amaurotic eye affected with cataract. The operation apparently succeeds, the cataract is removed, the pupil is clear; but the patient remains blind, and then it is found, on ophthalmoscopic examination, that there is some disease of the optic nerve or retina. A patient affected with a mature cataract, the eye being otherwise healthy, should be able to distinguish, in a dark room, the light of a low burning lamp at a distance of twelve or fifteen feet. The condition of the field of vision is best ascertained in the following manner:—The patient having been placed in a dark room, is directed to close with his hand the eye which is not under examination, and to look steadily with the other in the direction of his uplifted hand, which should be held straight before him, on a level with his eye, and at a distance of about twelve inches. A lighted candle is then to be held in different parts of the visual field, and the furthest point at which it is still visible in certain directions noted, the candle being alternately shaded and uncovered by our hand, so as to test the readiness and accuracy of the patient's answers. Care should also be taken to shade the candle when it is removed to another part of the field. In our case the tension of the right eye is quite normal, its field of vision perfect, and the perception of light very good, for she is able to see the light from a low burning lamp at a distance of fourteen feet. Were it otherwise, and did the perception of light or the field of vision show any marked deterioration, our suspicions of some deep-seated complica-

tion of the cataract should be aroused, and the previous history of the case, and the exact mode of the loss of sight, be carefully inquired into. The nature and situation of the contraction or loss of the visual field often affords us a valuable clew to the character of the complication. Thus, if the upper or lower half is lost, we must suspect detachment of the retina; if the lateral halves are wanting (hemiopia), some affection involving the optic nerves. In cases of cerebral amaurosis the contraction of the field is generally concentric, or it commences at the temporal side; whereas in glaucoma, it mostly begins at the nasal side, the outer portion of the retina being the first to suffer. Should such a contraction of the field exist, we must very carefully examine the degree of eye-tension, and search for other symptoms of glaucoma.

3. Now, what operation should we perform? In senile cataract, as you are aware, the lens must be extracted; for reclination or couching is quite out of the question, and is an operation which should be entirely abandoned. Division by the needle is only applicable in soft cataracts; for in hard, senile cataracts it would have to be repeated over and over again, and many months, or even some years, might elapse before the cataract was absorbed. We must therefore select some mode of extraction, and I should advise, for reasons I need not explain here, the performance of Von Graefe's operation, of which I will give a brief description; for although it is now generally employed, some of you may not be quite conversant with all its details. The operation is divided into four periods:—1, the incision; 2, the iridectomy; 3, the laceration of the capsule; 4, the removal of the lens. It is to be performed in the following manner:—

1. *The Incision.*—The patient having been placed completely under the influence of chloroform, the eyelids are to be kept apart with the stop speculum, and the eye fixed with a pair of forceps; the point of a long narrow knife (Fig. 1), with its cutting edge turned upwards, is then to be entered in the sclerotic (at the point A, Fig. 2, which represents the left cornea), near the upper and outer portion of the cornea, about one-third of a line from its edge, so that it may enter the anterior chamber quite at the periphery. The point of the knife should be at first directed downwards and inwards, towards C, the edge of the blade being turned a little forwards; and then, when the blade has advanced about three and a half lines into the chamber, the handle is to be depressed, and the point carried along to B, where the counter-puncture is to be made, at a point exactly corresponding to the puncture A. As soon as the counter-puncture has been made, the edge of the blade is to be turned somewhat obliquely upwards and forwards, and the knife pushed straight on until its length is nearly exhausted, when the section is to be completed by drawing it backwards from heel to point. The knife will then lie under the conjunctiva, which is next to be divided, in such a manner as to leave a conjunctival flap of about one to one and a half lines in height.

Fig. 1.

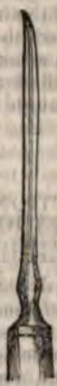
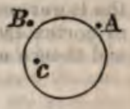


Fig. 2.



2. *The iridectomy.*—The little conjunctival flap should be turned back over the cornea with a very small pair of iris forceps, which will lay bare the prolapsed portion of iris; the latter should, if necessary, be drawn out a little further, and excised to the required extent, quite close to the ciliary insertion. This is not, however, to be done by one cut, but by three or four successive snips with the scissors, the blades of which are to be slightly turned, so as to follow the curvature of the eyeball. Great care should taken to snip off the iris quite close to the section, especially at the angles of the latter, where little protrusions of iris are apt to occur.

3. *Laceration of the capsule.*—The operator, steadily fixing the eyeball with the forceps, next proceeds to lacerate the capsule freely with the pricker by successive incisions. The one is to commence at the lower edge of the pupil,

or even a little behind it beneath the iris, and extend upwards along its inner side; the other passing to the same extent along the outer margin of the pupil. Both incisions should reach quite up to the periphery of the lens exposed by the iridectomy. Finally, the capsule should be lacerated at its periphery in a line corresponding to the section. In using the pricker, its edge shou d always be turned in a slanting direction, and not be pressed firmly backwards, otherwise the cataract may be dislocated into the vitreous humour, or its upper margin displaced behind the upper edge of the incision.

4. *Removal of the lens.*—The eye being fixed by the forceps, which are to be applied a little below and on one side of the centre of the lower margin of the cornea, the back of the silver curette (or Von Graefe's vulcanite curette) is to be placed upon the lower margin of the cornea and pressed slightly backwards and upwards, so as to cause the upper edge of the lens to present itself in the section; and then the pressure is to be made directly backwards, in order that the lens may be rotated round its transverse axis, and tilted well forwards into the wound. When this has occurred, its exit is to be gently aided by pushing the curette slowly upwards over the surface of the cornea, so that it follows step by step the delivery of the lens. If it is found that portions of the lower cortical substance are stripped off and are inclined to lag behind, the curette should be drawn back again a little, and the fragments of the cortex pushed along after the body of the lens, and in this way the whole of the cataract will generally be removed. If the appearance of the cataract indicates the presence of a good deal of soft matter, it is well to work this gently towards the centre by pressing the curette lightly from the lower and lateral margins of the cornea towards its centre, before attempting to remove the lens, for thus we may generally succeed in getting the soft matter to exude with the firmer nuclean portions. If small fragments of lens-matter still linger behind after the body of the cataract has been removed, they should be coaxed out by again passing the curette over the cornea, and pushing them on in front of the instrument; or, as Von Graefe advises, the lid-holder having been removed, the operator should gently rub the lids, more especially the lower one, in a circular direction, and thus loosen the marginal portions of cortex from behind the iris, and bring them into the area of the pupil, and thence out through the wound.—*Lancet, Dec.* 11, 1869, *p.* 797.

76.—ON EXTRACTION OF CATARACT BY THE MODIFIED LINEAR METHOD OF PROF. A. VON GRAEFE.

By William Stokes, Jun., Esq., Surgeon to the Richmond Surgical Hospital, Dublin.

There can be no doubt that the typical operation for senile cataract is the flap extraction, performed with Beer's triangular knife. The eye, after the operation, appears perfectly normal, the iris being left untouched; the sight is also better, there being no circles of diffusion on the retina, consequent on the iridectomy; but, on the other hand, as Mr. Soelberg Wells observes, "these great advantages are often counterbalanced by the considerable dangers which beset the operation. On account of the great size of the flap, there is much risk of the vitality of the cornea becoming impaired, and of its undergoing partial, or even diffuse, suppuration, which may be accompanied by suppurative iritis, or irido-choroiditis. Again, prolapse of the iris is a not unfrequent complication, proving a source of not only great annoyance and irritation, but even of danger, to the eye. The after treatment, also, demands much care and attention, more, indeed, than can generally be bestowed in a hospital, especially in a general one, with no special nurses or ophthalmic wards."

The great liability to corneal suppuration and the other unfortunate sequelæ, doubtless known to all present, which so often supervene after the ordinary *flap operation*, especially when performed in a general surgical hospital, *without any special provisions* being made for ophthalmic cases of this sort, *have hitherto prevented* the great majority of operating surgeons from undertaking the care of such cases. This being the case, a modification of the ordinary flap operation, such as the procedure now under consideration, which, by the consent of almost all ophthalmists, unquestionably diminishes the chance of the occurrence of those unfortunate accidents, which, in so many cases, lead to the permanent loss of the eye as an organ of vision, is, I think, a subject worthy of our most anxious consideration.

The advantages of Von Graefe's method, which is a modification of Waldon and Critchett's operations, may be briefly stated as follows:—

1st. The chances of corneal suppuration are considerably diminished, as the diameter of the flap is so small, and is made in the sclerotic instead of in the cornea. This makes the operation specially adapted for glucosuric cataracts, as from the enfeebled and debilitated condition of persons afflicted with diabetes, the cornea is especially liable to take on suppurative action after extractive operations.

2nd. The operation can be performed while the patient is under the influence of chloroform.

3rd. The chances of iritis are diminished, as that structure is not pressed on or crushed by the passage of a hard lens through the normal pupil.

4th. The removal of the lens is facilitated by the vertical section of the cornea, and in the lens being removed in its own plane, not being in the slightest degree turned on its axis.

5th. The line of section being nearly straight, there is little or no chance of gaping of the wound.

6th. The great rapidity (owing to the wound being in the sclero-corneal junction) with which the wound heals.

7th. The extreme facility of the operation.

In the original paper on the modified linear extraction, by Professor A. Von Graefe, published in the "Archiv. für Ophthalmologie," for 1865, it will be seen that the operation is divided into five stages.

In the first stage, the small narrow-bladed knife, specially constructed for this operation, with its edge upwards, and the flat portion in front, is introduced as peripherally as possible into the anterior chamber. In order to make the inner opening as large as possible, the point of the knife is first directed, not immediately across to the point of counter-puncture, but downwards and inwards: the handle of the knife is then depressed, and the point is directed under the edge of the sclerotic to the point of counter-puncture. Mr. Critchett and Arlt prefer making the section throughout in the cornea, as they think there is less chance of prolapse of the iris and loss of vitreous. When the resistance is overcome, showing that its counter-puncture is effected, the knife must be turned forwards, so that its back must be directed towards the centre of the ideal sphere of the cornea, and then complete the section in this plane by boldly pushing the knife forwards to its entire length, and then drawing it backwards. The formation of a small flap of conjunctiva a line and a half or two lines in length, completes this stage of the operation. A perpendicular section of the cornea is thus made, which greatly facilitates the passage of the lens, and the line of the incision is nearly straight, which prevents gaping of the wound.

The second stage consists in the introduction of a small iridectomy forceps (Von Graefe uses a straight one), and seizing the iris at its most prominent point, a portion of it is gently drawn through the wound. The portion drawn through the wound is somewhat triangular in form, and is divided at its base by two cuts of the scissors, one at each side. The iris should be excised at the end of the wound, and great care should be taken that no portions remain behind in the section, as they are liable to give rise to great irritation, and prolapse also.

The third stage consists in opening the capsule by a V-shaped incision.

The fourth is in removing the lens by gently pressing on the posterior lip of the wound, which is usually sufficient when the cortical portion of the lens is tolerably soft. When this is not the case, Von Graefe recommends the use of a hook, which, in his experience, has been found necessary in about one case in eight.

The fifth and last stage consists in clearing the pupil and adjusting the edges of the wound.

I shall now, with all possible brevity, detail the particulars of some cases of cataract which I have recently operated on by Professor Von Graefe's method.

Case 1.—*Uncomplicated Double Senile Cataract; operated on by the Modified Linear Method.—Successful result.*—Brian Rourke, aged 63, by occupation a porter, was admitted into the Richmond Hospital under my care last April. He stated that about fifteen months previous to his admission into hospital, he observed the sight of his right eye getting dim. This dimness came on gradually; but in about three months he lost the sight in it. About this time he observed that the sight of the left eye was also failing; to use his own form of expression, the dimness in both eyes came on as "if a veil were let down in front of his face." On examination, a double hard cataract was clearly perceived. In the right eye the opacity was so great as render the patient completely blind; but the left eye was not "ripe" for operation, and with this eye, when the pupil was fairly dilated, the patient was able to see a little. The case was quite uncomplicated; there were no adhesions of the iris, it was normally dilated, and reacted well to the light; the tension of the eyeball was also quite normal, and there was no evidence existing or no previous history of any inflammatory process having occurred in either eye. On April 3rd the operation of extraction was performed precisely in the manner recommended by Professor Von Graefe, and as I learned it from his talented assistant Dr. Theodore Lever, and Dr. Liebreich, the eminent oculist at Paris.

On the 5th of April the bandages and dressings, &c., were removed, and the pupil was found perfectly clear, and there was not the slightest evidence of any inflammatory process existing whatever. There was a slight extravasation of blood in the anterior chamber, which, however, after a few days became quite absorbed.

On April 23rd, with convex glasses, he could see quite distinctly, and was enabled to return to his usual avocations.

Case 2.—*Senile Cataract. Extraction by the Modified Linear Method.—Successful Result.*—Anne Douglas, aged 40, a laundress by occupation, was admitted into the Richmond Surgical Hospital on December 28th, 1869, suffering from hard senile cataract in each eye. She stated that she first perceived a dimness in both eyes about two years ago, since which time it has been gradually and steadily increasing, until, on admission, the sight was completely lost in the left eye, and the right was in very nearly the same condition. As she was in a very debilitated condition of health, tonic medicines and nourishing diet were freely adminstered, and on the 12th of January I performed Von Graefe's modified linear extraction.

On examining the patient next morning, the cornea was found to be perfectly clear; there was no pain or other evidence of any local inflammatory action.

Four days after the operation, the wound in the cornea was found to be completely healed, with the exception of one point at the inner portion of the wound, where there was a small portion of the iris protruding. This, however, soon disappeared, and on the 24th all the bandages were removed, and she was able to get up and go about with a green shade, perfectly cured.

Case 3.—*Senile Cataract. Extraction by Von Graefe's Modified Linear Method.—Successful result.*—Mary Sadlier, aged 50, was admitted into the Richmond Surgical Hospital on the 10th of January, 1870, suffering from hard senile cataract of both eyes. She stated that about three years ago she first perceived a dimness in the right eye, and that about two years afterwards the left eye began to be similarly affected. On admission into hospital she was almost completely blind, and had entirely lost the use of the right eye, and had barely any perception of light in the left.

On the 18th of January I performed Von Graefe's modified linear extraction. In this case I found the operation was attended with considerable difficulty, owing to the sunken condition of the eyeball, as well as from the fact that near the close of the operation the patient became sick and vomited. During the operation, after making the iridectomy, a considerable quantity of blood became effused into the anterior chamber; but on the escape of the lens this also passed out through the wound, leaving the anterior chamber quite clear. From these circumstances, a very favourable prognosis was not found. On examining the eye, however, next morning, both the cornea and anterior chamber were found quite clear, and there was very little local pain. The patient continued to progress very favourably only that for some time subsequent to the operation there was a good deal of lacrymation and pain, which was effectually relieved by local depletion. Ultimately the recovery was a perfect one.

Case 4.—Hard Senile Cataract. Extraction by Von Graefe's Modified Linear Method.—Successful result.—James Gill, aged 49, a blacksmith by occupation, was admitted on the 13th of January, 1870, into the Richmond Surgical Hospital, suffering from the so-called cataracta nigra. He said that about three months previously he first observed a cloudiness in the right eye, and about five or six weeks after he had the same sensation in the left; the dimness of vision increased rapidly, and on his admission he was found to be completely blind of his right eye. The lens was of a dark brownish yellow colour, and there was a peculiarly large and prominent anterior chamber.

I performed Von Graefe's modified linear operation on the 25th of January, and the next day the eye was perfectly free from any symptom of inflammation, and was so completely free from pain that, as the patient expressed it, he was "at a loss to know which eye had been operated upon." This case progressed most favourably, no bad symptom whatever supervening.

In a short communication, like the present one, it would be impossible to discuss a vast number of points connected with the operation of cataract extraction, suggested by the difficulties and accidents that may arise during the operation, as well as subsequent to it, and by the proposals and procedures of Bowman, Critchett, Waldau, Mooren, Jacobson, Beer, Richter, Pagenstecher, Liebreich, and others, as such would necessarily require a much longer time than is at my disposal on the present occasion. I shall therefore conclude by stating that, looking at the fact that in the experience of Von Graefe, and a host of other eminent ophthalmists, that a far larger percentage of recoveries is obtained by the modified linear method than by any other procedure previously adopted and also that every case of cataract that I have operated on since I adopted this method has been successful, I cannot avoid coming to the conclusion that this modification of the ordinary linear method of extraction is a genuine improvement in one of the most important and attractive branches of surgery. It must, too, also be remembered that equally satisfactory results have been obtained by many other surgeons who, like me, are not specialists in ophthalmic surgery, and whose operations were, like mine, performed in a general surgical hospital, where there are no specially trained nurses or special wards, or special management of any kind for ophthalmic cases. It is also an operation of extreme simplicity, and there is no difficulty attending its performance that any practical operating surgeon, with a steady hand, and the most ordinary manipulative dexterity cannot easily overcome.—*Med. Press and Circular, March* 30, 1870, *p.* 247.

77.—A MODIFIED OPERATION FOR CLOSED PUPIL AFTER EXTRACTION OF CATARACT.

By Dr. Henry D. Noyes, Surgeon to the New York Eye and Ear Infirmary.

When severe or protracted inflammation has followed the removal of cataract, and good perception of light remains, the hope of recovering sight depends on the possibility of making a permanent opening through the dense membrane which often occupies the lenticular fossa.

This membrane is found upon the iris as a framework, and consists chiefly of new connective tissue re-inforcing both iris and capsule. It often acquires a toughness which defies the grasp of iris forceps, and renders the usual method of iridectomy unavailing. It is often highly vascular, and the flow of blood into the anterior chamber soon compels the operator to desist.

Iridotomy, that is, a simple incision through the diaphragm, may sometimes succeed, but the aperture is very liable to close.

Another operation, devised by Dr. Agnew, of New York, will sometimes overcome the difficulty. A broad needle is pushed through the cornea and membrane, at the distance of a line from the limbus; while this is held in position, a wound is made at the opposite side of the cornea, through which a small hook is introduced and caught in a hole made by the needle in the secondary cataract. In pulling out the hook this hole is enlarged, and perhaps a portion of tissue brought through the corneal wound. The purpose of the needle is two-fold: first, to make an opening through the membrane; second, to offer sufficient resistance in tearing it.

The second indication of the needle is of great importance; without it either a dialysis at the ciliary ring may occur, or the drag of the hook pulls so hard on the sclera as to cause it to be deeply indented, and the membrane will not yield.

But the help of the stop-needle is not always sufficient to tear a hole in this membrane. I have been foiled in the attempt, and therefore compelled to devise another method.

It is as follows: The instruments needed are a stop spring speculum, fixation forceps, a rather broad Graefe's extraction knife, two small hooks, and a pair of scissors. It is better to give an anæsthetic. The Graefe's knife is entered at the outer margin of the cornea, and carried completely across in the horizontal meridian, until it emerges at a corresponding point on the opposite side; the wound of counter-puncture must be as large as that of entrance.

The knife is partially withdrawn, and when its point comes opposite the iris, it is plunged backwards through the diaphragm into the vitreous. In doing this the handle is raised from the horizontal to an oblique position, and by the escape of aqueous at the inner wound the iris comes forward to meet the point of the knife. The wound in the diaphragm should be made as large as possible. When this has been done the knife is quickly withdrawn before all the aqueous humour shall have escaped.

Immediately, before bleeding becomes profuse, a hook is passed through each corneal wound. The operator holds one in each hand. The hooks are blunt at the point, have rather an open curve, are very slender, and made of soft metal, so that the shank may be bent to any angle; the shank is about an inch long.

The hook which enters at the inner corneal wound must have a bend at the middle of the shank to nearly a right angle. This hook it is better to put in first, then put in the hook at the outer wound. The points of both hooks are now to be caught in the wound made through the middle of the iris and traction to be made in opposite directions. The effort must be, to drag out a portion of tissue at each corneal wound, and if any can be pulled through, it must be cut off, and thus the hooks are liberated. If none can be brought out, the hook must be disengaged when it comes to the corneal wound.

The manipulation of the hooks requires tact and delicacy: to rotate the bent hook so that it shall first enter flatwise, and then be turned to catch in the iris, is a little troublesome. When both hooks are fairly caught in the iris, any needful degree of force may be used upon the membrane without danger of doing mischief. The force is expended exclusively upon the membrane to be torn, and inasmuch as one hook pulls against the other, the available amount of force is much greater than can be safely employed by any other mode of operating.

I have yet to find a secondary cataract as tough as not to yield an opening to this persuasion. The pupil thus made is central and abundantly large. It is better to make it large, because there will be ultimately a slight reduction of its size as the corrugated sides of the membrane stretch out.

I have applied this method to three cases, and in all have felt satisfied that a less efficient proceeding would not have secured success.

The degree of reaction after the operation has been moderate, and the eye has been considered well in ten days, or two weeks.—*Ophthalmic Hospital Reports, April*, 1869, *p.* 209.

78.—ON THE THEORY OF GLAUCOMA.

By Drs. Magni and Stilling.

Magni (Rivista Clinica, 1865), and Mazzei (Ibid., 1867), oppose the German theory of glaucoma and propound another. According to the German school, glaucoma is due to an increase of the intra-ocular fluid by exudation from the choroid. The authors object that such exudation, when it occurs posterior to the ora serrata, leads to separation of the retina and to atrophy of the eyeball, but not to glaucoma. If the process be referred to the ciliary region, or, in other words, to cyclitis, we have fresh difficulties arising from the differences between the symptoms of the two diseases. Thus:—

In Glaucoma.	*In Cyclitis.*
The convexity of the cornea is diminished.	Increased.
The iris is atrophied.	Hyperæmic.
The diameter of the eyeball shortened.	Lengthened.
The size of the ocular chambers diminished.	Increased.
The coats of the eyeball thickened.	Thinned.
The crystalline lens diminished.	Normal or enlarged.
The ciliary processes atrophied.	Hyperæmic.
The vitreous condensed, firm.	Fluid, almost watery.
The papilla excavated.	Normal.
The ciliary nerves atrophied.	Normal.

In the presence of these differences it is scarcely possible to assume a similar pathogenisis for the two diseases, which resemble each other only in the single point that in both there is a venous stasis in the retina.

The tension of the ocular capsule in glaucoma is explained by Magni as a result of its contraction (*stipamento*), from which it follows that the intraocular fluids must be diminished, and that the vitreous humour must be condensed by loss of its serum. Moreover, the atrophy of the ciliary body, on which the normal quantity of the intra-ocular fluid depends, permits a decrease of this fluid to be expected.

According to V. Graefe's theory, the excavation of the papilla is due to the pressure of the increased fluid upon the lamina cribrosa. This texture, according to Magni, is neither elastic nor extensible, and has a more considerable thickness than that of the fibrous capsule of the globe itself. Why is there no excavation in pronounced hydrophthalmus? An excavation from pressure must necessarily have the form of the letter U or V; while in glaucoma, according to Magni, the papilla assumes the form of a truncated cone, with its smaller extremity directed towards the vitreous.

Magni believes that atrophy of the ciliary nerves affords a complete and sufficient explanation of the course and the changes of glaucoma. By such atrophy the secretory function of the vascular membranes of the eye is diminished, and in the degree that this diminution occurs, and that the vitreous becomes more dense and less bulky, the sclerotic must contract to follow the diminution of its contents. In this way the sclerotico-chorodial foramen, that embraces the optic nerve, becomes much shrunken and drawn in, especially at its inner portion, by which the peculiar form of the glaucomatous papilla is fully explained.

According to Magni, therefore, glaucoma is a chronic disease, depending upon gradual atrophy of the ciliary nerves. The acute glaucoma of V. Graefe is only an already existing glaucoma, complicated by acute choroiditis. The excavation is always accompanied by atrophy of the nerve; and it is difficult to conceive how an inflammation could render the nerve atrophic in a few hours, if it had not been so before. Moreover, there are many cases of acute serous choroiditis without excavation, in which the symptoms in no way differ from those of the cases in which excavation is present. The iridectomy may relieve both the choroiditis and the glaucoma; but since we have as yet only ingenious hypotheses by which to account for its action, the results of treatment cannot afford any test of the correctness of the theory.

Dr. Stilling, of Cassel (Arch. f. Ophth., xiv., 3), attributes the occurrence of glaucoma to an inflammation of the vitreous of a serous character. He does not see how the pus elements in the vitreous can be derived from the stroma cells of the choroid, or the increase of the fluid of the vitreous from a serous choroiditis. It is necessary to assume two forms of plaster, and two of serous choroiditis; the products of one form penetrating through the retina and hyaloid, the other leading to detachment of the retina. As positive evidence of the possibility of inflammation of the vitreous body, Stilling advances new facts with regard to its membranous structure. He repudiates the idea that it is a formless mucous mass inclosed in a structureless membrane; and by a special mode of preparation with a solution of carmine he has obtained evidence, to the naked eye, of a fibro-membranous scaffolding in the fresh eyes of mammalia. The somewhat eccentric canal that passes through the vitreous from the papilla to the posterior surface of the lens, may be easily rendered visible in the eye of a pig. The vitreous and lens being lifted together from the eye, the lens removed, and the vitreous turned over in sufficient water to immerse it to half its height, a drop of carmine solution must be placed in the clearly visible funnel-shaped space at the posterior pole. The canal will sometimes fill itself immediately up to the anterior pole, although at other times the vitreous must be somewhat turned and moved before the experiment will succeed. If more water be then added, and the whole vitreous allowed to float, the reddened canal will be clearly visible through the transparent parts around it. It is possible that the projection forwards of the lens, and the excavation of the papilla in glaucoma may be due to this canal being overfilled with fluid.—*Ophthalmic Hospital Reports, Nov.*, 1869, *p.* 321.

79.—ON THE DIAGNOSIS AND TREATMENT OF STRABISMUS.

By J. Soelberg Wells, Esq., Ophthalmic Surgeon to King's College Hospital, and Assistant-Surgeon to the Royal London Ophthalmic Hospital.

[In his clinical lectures Mr. Wells brought forward the following cases to illustrate some of the most important points in the diagnosis and treatment of the common or "concomitant" strabismus, points of which a knowledge is absolutely necessary in order to treat the affection with success.]

The first patient is J. S., a boy of twelve years of age, who has had a convergent squint of the right eye since his fourth year. Before proceeding to examine him, I must state that, in the examination of every case of strabismus, special attention must be paid to the following points:—1. Whether the squint is always confined to one and the same eye, when both are open, or whether it alternates. 2. The size of the squint. 3. The relation between the primary and secondary deviation. 4. The movements of the eyes. 5. The sight and state of refraction of the two eyes, and the presence of diplopia. 6. The cause of the affection.

Let us now very briefly ascertain these different points in the case before us.

1. The strabismus is monolateral—*i. e.*, is always confined to the right eye when both are open, and does not show the least tendency to alternate; in which case sometimes the right eye, sometimes the left, would be the squinting one.

2. The size of the squint is 2½ lines; this is easily measured in the following manner:—The patient having been directed to look (both eyes being open) at some object a few feet distant, we note a spot upon the lower lid of the right eye which would correspond to an imaginary line drawn through the centre of the pupil of this (the squinting) eye. The left eye is then closed, and the right directed upon the object; and the spot on the lower lid is again noted, which now corresponds to a vertical line drawn through the centre of the *pupil*. The distance between the first and second spot gives us the linear size

of the squint. At first these spots may be marked with ink upon the lower lid, but a little practice soon enables us to estimate the distance between them with considerable accuracy. This proceeding is illustrated in Fig. 1, in which the left is represented as the squinting one: A represents the mark corresponding to the centre of the pupil when the eye is squinting; B, the mark corresponding to the centre of the pupil when the eye is fixed upon the object. The distance between A and B gives the size of the squint. I much prefer, however, to employ Mr. Zachariah Laurence's strabismometer (Fig. 2), which consists of an ivory plate (P) moulded to the conformation of the lower lid. Its border is graduated in such a manner that while the centre is designated 0, Paris lines and half lines are marked off on each side of 0. If we now apply the plate to the lower eyelid of the squinting eye, the size of the squint can be read off with great ease and accuracy. The size of the squint should not only be ascertained when the patient is regarding a distant object, but also when he is accommodating for near objects; for in hypermetropia it often increases very considerably in the latter case, so that a squint which perhaps only amounts to 2 lines for distance, may increase to 5 lines when the patient regards some near object.

Fig 1.

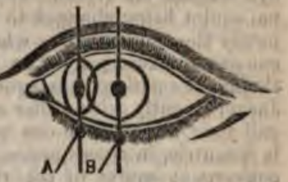
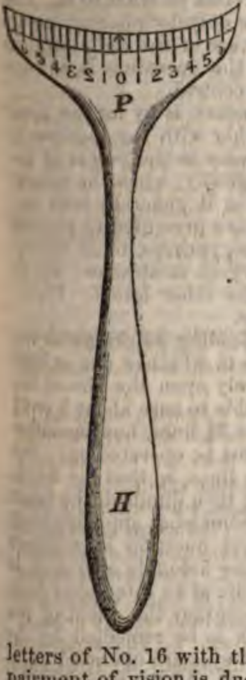


Fig. 2.



3. In the common or concomitant squint the primary and secondary deviations are exactly equal. In this patient the primary deviation is that of the right eye, and measures 2½ lines. If the left eye is covered, the right moves outwards to the extent of 2½ lines in order to "fix" the object. This movement is accompanied by an inward deviation (also of 2½ lines) of the left eye, which now becomes the squinting one, and this is termed the secondary deviation. Now in cases of paralytic strabismus, the secondary deviation (for reasons upon which I cannot enter here) always greatly exceeds the primary, and hence this point is of much diagnostic importance in distinguishing between the concomitant and paralytic strabismus.

4. The movements of the eyes are perfect in all directions.

5. The difference in the sight of the two eyes is very great, for whilst the patient is able to read No. 1 of Jaeger with the left eye, he can only decipher letters of No. 16 with the right; its fixation is, however, central. This impairment of vision is due to the prolonged disuse of the squinting eye and mental suppression of its retinal image, for no structural lesion can be discovered. To avoid this impairment of sight, cases of strabismus should be operated on as early as possible, before the sight is materially deteriorated. A very erroneous and mischievous opinion is still somewhat prevalent in the profession, that the operation should be deferred until the patient is grown up. I am very strongly opposed to the practice of unnecessarily postponing the operation, as I have frequently seen great and permanent impairment of vision, from non-use of the eye, produced even within a few months of the first appearance of the squint; this being especially the case in young children. If it is, however, absolutely necessary to postpone the operation, for some length of time, we should direct each eye to be frequently used separately, for we may thus produce an alternating squint, and preserve the sight of both eyes. Hence, in cases of alternating strabismus the sight of both eyes is almost invariably excellent. A good example of this is afforded by the next

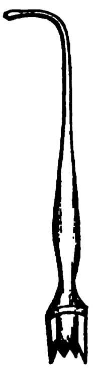
patient (J. C., aged 14,) who has a well-marked alternating squint of three lines and a half. He generally squints with the left eye, but on closing the right, and causing the left to fix the object, we notice that when the right eye is again uncovered, the left still remains fixed upon the object, the original squint being changed to the right eye. We can thus make each eye alternately the squinting one when both are open, and hence the sight of both is constantly exercised. The benefit of this is well shown in this case, for although the patient has squinted for more than ten years, he can read No. 1 Jaeger fluently with either eye. In the third patient (R. B., aged 10,) I would call your attention to one point—viz., that the fixation of the squinting eye is eccentric, in consequence of which its sight is greatly affected. There is a convergent squint of the right eye of about four lines, which at the first glance appears to resemble the first case; but on closing the left eye, and directing the patient to look at the object with the right, we notice that its fixation is not central, for its optic axis is not directed upon the object, but deviates inwards from it, so that the rays emanating from the object do not fall upon the yellow spot, but upon a portion of the retina internal to it. The sight is consequently much deteriorated, the right eye only deciphering letters of No. 20 with difficulty. The prognosis as to the cure of the squint and as to the improvement of the sight to be effected by the operation is always much worse in such a case than when the fixation is central.

6. Hypermetropia, as was first pointed out by Donders, is by far the most frequent cause of convergent strabismus; for, together with the increase in the convergence of the optic axes, there is an increase in the power of accommodation. At first the squint only occurs periodically, when the patient is looking fixedly at some object near or distant; but it generally soon becomes permanent. All the three patients whom I have presented to you are hypermetropic. Impairment of vision of one eye (due, perhaps, to an opacity of the cornea or lens) is often also a cause of convergent strabismus; but in such cases hypermetropia frequently coexists with the other lesion. Divergent squint occurs most commonly in myopic persons.

In conclusion, I must briefly touch upon a few leading points as to the operative treatment of strabismus. The question as to whether one or both eyes are to be operated on depends solely and entirely upon the size of the squint. By a properly performed tenotomy we are able to cure about 2 or 2½ lines of deviation; hence if the squint measures 2 or 2½ lines, one operation will suffice; whereas if it exceeds this, both eyes must be operated on. But what are we to do if the deviation only measures 1½ lines, so that the tenotomy would have too considerable effect? We must then diminish the latter by applying a conjunctival suture, and thus again somewhat approximating the divided ends of the tendon. Another important question is, whether both eyes are to be operated on at one sitting, in case a double operation is necessary. As a rule, I think it much better to operate at an interval of from three to four days; for we can then estimate with accuracy the effect of the first operation, and the degree of deviation which is to be remedied by the second. Whereas this is quite impossible when both eyes are operated on at one time; so that too great an effect may be produced, and the patient get a divergent squint. To obviate this, the power of convergence should always be tested shortly (within twenty-four hours at the latest) after the operation when the effect of the chloroform has passed off; and if it is found that when the object (an uplifted finger) is approximated to five or six inches from the eyes, the one eye deviates outwards, a conjunctival suture should be at once inserted, so as to limit the effect of the operation, which is too considerable; otherwise a more or less considerable divergent squint would result.

I generally perform the following slight modification of Von Graefe's operation, which combines the advantages of Von Graefe's and of the subconjunctival operation. The patient having been placed under the influence of chloroform, and the lids kept apart by the spring speculum, an assistant averts the eye with a pair of forceps, which grasp the conjunctiva and subconjunctival *tissue just* over the centre of the insertion of the external rectus (I am *supposing that the* internal rectus of the right eye is to be divided). With a pair of finely pointed forceps I then seize a small but deep fold of the conjunctiva and subconjunctival tissue, near the edge of the cornea, and midway between the centre and lower edge of the internal rectus, and divide the fold with a pair of blunt-pointed straight scissors, burrowing somewhat beneath the subconjunctival tissue in a downward and inward direction, so as to make a funnel-shaped opening beneath the subconjunctival tissue. The squint hook (Fig. 3) is then passed through the opening to the lower edge of the tendon; and its bulbous point being pressed somewhat firmly against the sclerotic, the hook is turned on the point and slid upwards beneath the tendon, as close to its insertion as possible, the whole expanse of the tendon being thus caught up. The points of the scissors are then to be introduced into the aperture and one blade being passed along the hook behind the tendon, the other in front of the latter, between it and the conjunctiva, the tendon is to be divided close to its insertion by successive snips of the scissors. When it has been completely cut through, the conjunctiva is to be slightly lifted on the point of the hook, and a smaller hook passed upwards and downwards to ascertain if the lateral expansions of the tendon have been divided. If not, they should be cut through; for, even although only a few lateral fibres remain standing, they would suffice to spoil the effect of the operation. In tenotomy of the internal rectus of the left eye, I make the opening *above*, just between the centre and upper edge of the tendon, for this has the advantage of obviating any sinking of the caruncle. If it is found that the effect of the operation is too considerable, so that the eyes cannot be converged up to a point of five or six inches from the eye, but one shows a tendency to deviate outwards, a conjunctival suture should be applied, to diminish the effect of the operation by approximating the cut ends of the tendon. The suture (which is to be applied within twenty-four hours of the operation) is to be inserted in a diagonal direction, passing from downwards and inwards to upwards and outwards, so that the inner and outer lips of the conjunctival wound are united; it may be left in from twenty-four to thirty-six hours.—*Lancet, Nov.* 27, 1869, *p.* 733.

FIG. 3.



80.—ON THE USE OF SIMPLE SYRUP AS A COLLYRIUM.

By Lawson Tait, Esq., Wakefield.

[There are few less satisfactory cases than those of that common affection "granular lids." Whether mild or severe means of treatment are used only temporary relief is obtained in most cases, and ultimately inversion of the edges of the tarsal cartilages takes place.]

In cases of pannus, usually the result of Egyptian ophthalmia, we have a very certain remedy in inoculation—that is, certain in the sense of either kill or cure. Under my own care, I have had one most satisfactory result from this treatment, but I have also had two cases of complete failure, and, of course, of irretrievable mischief. The secret of the successful selection of these cases was revealed to me by my failures; and in a recent conversation with Mr. Critchett I found that it had also been revealed to him. It is that, to be successful, the treatment of pannus by inoculation must be confined to cases where the whole cornea is vascular. In Mr. Critchett's words, "It is a little bit of clear cornea that we have to fear." This, of course, leaves very few cases where the inoculation is applicable.

In looking back over my cases, it appeared to me that the most successful treatment for ordinary cases of granular lids was that which seemed to act by mechanical lubrication,—as in the use of liquor potassæ, or in that of acetate of lead in powder, as recommended by Mr. Dixon. With this view I was induced, many months ago, to use in these cases nothing but simple syrup as a collyrium, and I have met with extremely satisfactory results in some cases,—but not in all. In many cases it may be combined, with great advantage, with other remedies, as with vinum opii, atropia, &c.

Of these cases, I have, unfortunately, not kept any detailed notes; but in all those in which the treatment was successful, it was complicated, and extended over many weeks. It consisted of dropping into the eyes, as often as they felt uneasy, a little syrup, made of the best sugar, and filtered quite clear. It was of such a strength that it did not deposit sugar: about three drachms or half an ounce of sugar to an ounce of water. During the first few days of its use it sometimes seems to make the symptoms rather worse, but this aggravation soon passes off, and the effect is generally not long in being manifested. The last case in which I used the treatment successfully was a very bad one. A delicate, strumous-looking girl, aged 8 years, had suffered from cloudiness, chronic ulceration, and vascularity of the cornea for nearly two years. The lids were granular, and she had all the other distressing symptoms. She used the syrup only, and in about nine weeks the corneæ became perfectly clear. She has since died of pulmonary phthisis, and some may possibly say that the appearance of this disease had something to do with the cure, or that the cure of the eyes had something to do with the establishment of the disease of the lungs.—*Lancet, Feb.* 12, 1870, *p.* 228.

SYPHILITIC AFFECTIONS.

81.—ON SYPHILIS AND CHANCRE.

By J. Cooper Forster, Assistant-Surgeon to Guy's Hospital.

[There is ample opportunity for observation of syphilitic diseases at Guy's Hospital, and Mr. Cooper Forster having, as is well known, devoted a good deal of attention to the subject, his opinions will be read with interest. No doubt a very great change has taken place in the general knowledge of this disease since Ricord's grand ideas were first made known.]

I hold that there is but one true syphilitic poison, one sore which should be called syphilis. The division into what are called "hard and soft chancres" is, to my mind, objectionable, as the amount of hardness around what is known as a hard "chancre" is often not of a typical character, that is to say, it may be more than what one usually feels in a true hard sore, or the amount of hardness may not be as much as you sometimes feel around a soft sore, especially when that sore occurs on certain parts, for instance, on the prepuce. I, therefore, think it would be better to do away altogether with the term "hard chancre," and call the sore which I wish to designate when using that term, as syphilis. You would speak of a patient as having syphilis, and when you wish to designate the local appearance, as having a sore, or a hard sore. The name "soft chancre," again, is apt to mislead; "chancre" is the term to be used. I am constantly asked by students, Will that soft chancre be followed by secondaries? showing that the word chancre is associated in their minds with true syphilis, or constitutional poisoning. We then have two poisons, one true syphilis or constitutional disease, and the other a mere local mischief, a chancre. I am aware that in attempting to alter the nosology of disease, one is meddling with a very serious subject, still I think that the terms hard and soft chancres, though sanctioned by the Nomenclature Committee of the College of Physicians under the comprehensive title of syphilis, are open to this very serious objection, that in the one case we are speaking of a disease which is frequently as great a curse as can fall upon any human being, in the other we are denoting a harmless local disease, attended by no ulterior consequences, or, at the worst, only loss of substance or cicatrices of the generative organs or in the groin, and certainly not any after mischief.

It is often said that syphilis, or a sore with a hardened base, is a very rare thing in the woman; indeed, some surgeons have stated that they have never seen one, and disbelieve in the existence of such a sore; undoubtedly they are *rare, but why?* Because these sores, in the early part of their course, are *generally, or almost* always, painless; nay, they may and do continue so, even *after the secondary symptoms* have appeared, and they may heal, leaving only a hardness, which exists for a short time, and then, being combined with what one so constantly sees in women, viz., the mucous tubercle, becomes with difficulty distinguishable from that sore. I have frequently called the attention of my dressers and pupils to the existence of a syphilitic sore, as I use the term, in a woman who comes to us at the hospital, not having had syphilis on any former occasion.

Surgeons who maintain the opinion that women are not subject to hard sores, of necessity conclude that all sores may be followed by secondary symptoms, denying the existence of any difference in the feel or appearance of sores in the female. And yet that there are two different kinds of sores *in the male* I cannot doubt; nor, I should think, does any one who looks at the subject with an unbiassed mind. But why should not this be true *of the female* also? May there not be a solution of the question in this manner, that owing to the freedom from pain women with syphilis can continue connection, and in the class of prostitutes who form our hospital patients, do continue their business without any inconvenience to themselves. Nay, in many cases I cannot help thinking they are unaware that they are the subjects of such a fearful malady. In by far the larger proportion of the prostitutes who come under my notice in the hospital chancres or painful sores are present with true syphilis, and it is owing to the presence of these chancres that they have been unable to pursue their business, for which reason they apply for admission, and not for the syphilis, for they have been unaware at the time of examination that they had more than the one sore, viz., the tender soft one, or chancre. Seeing a secondary eruption on them, I have carefully looked for a true syphilitic sore, and have frequently, though I admit not always, found one. I say not always, for if a patient have been the subject of syphilis prior to my examination, and she should appear in hospital with a recurrent form of secondaries, of course no primary sore will exist, and I cannot help thinking this to be another of the reasons why, in women, the sore of a syphilis is not always to be found. I feel convinced that women will get syphilis, have a rose rash which lasts a short time only, feel no inconvenience from their one sore, and only apply for advice after the appearance of the scaly or papular eruption, when all traces of the primary sore have disappeared, and they have obtained a chancre, for which they present themselves.

In men, again, the painlessness of the sore of syphilis is often a cause of their not noticing it. Who has not seen a patient with a primary sore of syphilis, said to have been observed a day or two before for the first time? And yet one has been perfectly certain, from its size, that many days at least, if not a week or more, must have passed since it first made its appearance; but so free from pain has it been, that the sore has not even attracted the patient's attention; if this be the case with the male organ which can be easily seen and watched for the commencement of any disease, how much more likely is it that this painless sore shall not attract the attention of the female on a part which she cannot see.

The period at which syphilis may occur after connection or imbibition of the poison is a point of some interest; that it does occur within a week, is undoubted; that it may also appear as long as five or six (or perhaps even more), I have also undoubted proof. In several instances a month has elapsed. In these instances the sore has been small and free from hardness, sometimes for a week; of course, also, the secondary symptoms have been delayed, even to three months. Now, it cannot be admitted, I think, that these periods vary so greatly if we suppose that all sores, primary or secondary, are capable of affording the same virulence of poison. I am forced to the conclusion that there are various intensities of the syphilis poison, according as in one case this poison may have been obtained from a typical hard sore, and in another from a mucous tubercle. If such be allowed, we then, I think, have an explanation of some of the difficulties attending the elucidation of many points in regard to syphilis, as, for instance, that the hardness appears in one patient within a fortnight after connection, in another not for a month or even later. Can otherwise the incubation vary so much for the same poison? In both cases the patient *has received* the poison, but in modified forms. Again, who has not seen cases in which multiple sores that were thought to be soft ones have ulcerated slowly for the first three weeks after infection, and yet at the end of that period, without fresh infection, one of them has assumed the nature of true syphilis. True syphilis is one; but the endless varieties and intensities of the poison are not to be attributed, I believe, to the idiosyncrasies of the recipient, as is so often stated, but to the mode of propagation of the poison. In examining a large number of women with syphilis, one fails frequently to find the true syphilitic hard sore, but almost universally, if the patient be the subject of syphilis, she has mucous tubercles in abundance. I therefore am driven to the conclusion that my explanation is the true one. It must be acknowledged that these mucous tubercles are capable of giving syphilis, though they are ,undoubtedly, a secondary form of the disease; but as the sore in the mouth of the syphilitic child will give syphilis to the nurse, so will these mucous tubercles give syphilis to the male, and I believe them to be a most fruitful source of contagion. It may be asked, how do I account for the presence of syphilis so frequently in the female as our Lock Ward shows? I certainly do not believe it arises from any kind of soft sore in the male, or any primary sore that has not more or less of a hardened base? and I think it arises more frequently from a secondary manifestation than from a primary sore. I also believe in the possibility of the absorption of the poison of syphilis by a mucous membrane, if there be the slightest abrasion of the surface, without a well-marked hardening *necessarily* following the wound. There is no contradiction between this and my former statement? men often do receive syphilis from a primary hard sore, women more frequently from a secondary.

It would be an important matter to a patient, if we could distinguish between syphilis and a chancre, when he presents himself to us soon after he has first observed anything wrong,—a week, for instance, after connection? but I hold it to be never possible to speak with absolute certainty in reference to this matter. Judging, however, from what I have seen several times, it appears, that, in the minds of some surgeons, every sore is syphilis. I could adduce several instances, and more frequently amongst the higher class ot patients, where the surgeon, immediately on seeing a sore, has announced that sore to be syphilis, and has immediately had recourse to mercury; if no secondaries follow, all the good result is attributed to the drug, whereas it is quite certain that, mercury or no mercury, had the sore been a true syphilis, secondaries must have followed. I much fear that, occasionally, there is more than ignorance on the part of the surgeon; I would not wish to be uncharitable, but I can hardly imagine how some who I should suppose must have known better can have assured their patients that the drug that had been used had prevented the after consequences of syphilis. I have repeatedly been told of this or I should not thus dwell upon it. I believe it to be our duty to confess to our patients, in the first instance, our utter inability to tell them whether the sores or sore are local sores or syphilis, and if it or they be unfortunately true syphilis, that the poison is imbibed the moment of connection, and that nothing can avail them in warding off its results. I always explain to any who inquire about the matter, that the poison of syphilis is like the vaccine virus, the moment it enters the system, by whatever means applied, it then and there immediately begins to affect the body. In the case of the vaccine poison—in this instance I will call it a poison—it shows its effects more rapidly than in the case of syphilis, but it is not the less certain to produce its results; the one follows as inevitably as the other, and with as much certainty.

At the period when a secondary eruption may be generally expected the character of the sore itself shows that an eruption must come sooner or later; it may be postponed, it may arrive early. My private cases give me as an average, seven or eight weeks from connection to the time of the eruption first appearing, though some authors give a longer period, extending to nearly three months. Undoubtedly exceptional cases do occur of the postponement of the skin manifestations to that period, but I think they *are* exceptional, at least I know they have been so in my practice; I have not four cases in which *they have* been postponed longer than three months.

Amongst the various forms of secondary eruption that have occurred in the patients I have had under my care in the Lock ward, by far the most common is the scaly; the macular is next in frequency; the papular, which is about as common as the scaly, and lastly, the tubercular, with rupia and ecthyma. This does not at all coincide with my private cases, where a roseola is by far the most common; but in enumerating these eruptions in their order, I must not omit to say that mucous tubercles accompany each and all of them, and are an almost constant attendant, being described by the woman as piles whenever they occur in considerable abundance about the anus and the lower part of the labia.

I have mentioned as the most uncommon form of skin disease, unless in very severe cases, and in the older patients, and sometimes even in younger ones who have gone through the various eruptions rather rapidly, rupia. I doubt whether this form of eruption ever occurs, except as a *sequela* of syphilis. That it is closely allied to and sometimes undistinguishable from ecthyma, there can be no doubt; it is usually said to occur at the termination of the syphilitic disease, but it undoubtedly occurs in young people sometimes very rapidly; at least, I have a patient not twenty under my care now who is suffering from a very severe form of rupia, and though female patients may, and undoubtedly do, acquire syphilis very early, the vigour of the constitution usually wards off this form of secondary disease until later in life than twenty. The only explanation I have of this form of eruption appearing early is the very deficient amount of food many of these women have to put up with.

These patients are, however, usually very amenable to treatment, and the eruption rapidly disappears, especially amongst the younger occupants of the ward.

It seems to be the form of disease which is a kind of transition state to what is known as the tertiary manifestation; and here let me explain the distinction that I draw between these two forms of the same disease. I would not do away with the terms—they are convenient. Secondary disease attacks skin and mucous membrane, and if the deeper seated parts, as in rupia, invariably attacking the superficial first and spreading from these to the deeper structures; whereas the tertiary form of disease is typified by gummy deposit—it attacks skin secondarily, commencing in the subjacent parts, and involving the skin only when the parts from which that skin derives its nourishment have been destroyed. All the diseases to which the other structures of the body are liable from syphilis—and what part is free?—I class as tertiary.

I am, of course, including here acquired syphilis only. Time is no element in my division; recurrent attack of skin disease is as much a secondary form as the first eruption was, and the fissures and cracks of the tongue, occurring, as they do sometimes, very many years after the poison was first received, are still only secondary manifestations. There is a form of secondary disease by no means uncommon which is very characteristic, viz. ulceration of the skin between and under the toes, and also about the nails, sometimes excessively troublesome to heal, at all times very painful; so far as my experience goes this occurs more frequently in women than in men, though the number of the patients of the latter class far exceed the former.

I now pass on to the soft sore, or chancre, the one by far the most frequently seen; a mere local affection, at the early stage most amenable to treatment, at any stage perhaps painful, but not disastrous in its consequences unless grievously neglected, even when the patient has herself or himself alone to thank for allowing it to have become large. As I have previously stated, this is the most common sore to be found in our female Lock Ward, and it is undoubtedly the one for which alone, in by far the larger number of cases, the women demand admission; it is almost invariably situated at some part of the female organ outside the vagina, rarely, if ever, within the canal, more commonly at the fourchette or at the fold formed by the carunculæ myrtiformes than at any other spot; its painfulness and inflamed condition, are I believe, as I have previously stated, the very causes of the patient coming before us. It is rapidly destructive in its action, and most frequently multiple, and when rapidly ulcerating will extend some short distance up the vagina, but its tendency is undoubtedly to spread outwards and involve the nymphæ, which it quickly destroys. In the older prostitutes one frequently finds either a scar of large size, or destruction of part of one or other of the nymphæ, as evidence of the ravages of this species of sore; indeed after a chancre I should say the evidence of past venereal disease exists far more permanently than after syphilis. I have just stated that these sores are multiple in character; they seem to increase in number in women more rapidly than in men, owing to the excessive moisture and secretion of the generative organs in the former. Thus, if seen on one labium, they are almost sure to be observed also on the opposite, at some spot to which the secretion from the original sore has easily reached; indeed, it always appears to me wonderful how any part of the vulva escapes contamination. The most distinctive sign to be noticed as indicative of the whereabouts of a sore is the almost universal presence of œdema. And if this be local, or in one labium only, there most assuredly will be found a sore in connection with it as the source of irritation. The natural tendency of this sore seems to be after some weeks to heal spontaneously, but before it does so it may involve the destruction of a vast surface, and sometimes of a considerable depth of tissue.

I will now offer a few observations as to the treatment I usually adopt, first, in a case of syphilis, or hard sore, and, secondly, in one of chancre, or a soft sore.

In speaking of the treatment of the sore of syphilis one has to deal with it in its several stages—firstly, when it is not a typical sore, but suspicious, a mere abrasion; again when it is well marked; and again when it is combined with a chancre, or when it takes the form of a soft sore or chancre, becoming indurated.

In all sores when first seen, no matter of what kind, provided there is no marked hardness I invariably destroy the surface with strong nitric acid carefully applied, frequently under the influence of chloroform, and then with the nitrate of silver rubbed in upon the destroyed surface. This latter application has usually a peculiar power of relieving the pain occasioned by the acid; if in the course of five or six days, the slough having separated, there is not a decidedly healthy action in the sore, I again apply the acid, after both applications dressing the part with wet lint. Great care must be used to apply the acid fully to each sore, or any one to which it is not applied quickly will again affect the ones that have been destroyed (provided there are more than one). I believe in all sores appearing a few days after a suspicious connection this is the plan of treatment that should be adopted. Supposing the sore to be true syphilis, or about to become hard, no harm is done; and if it be a chancre or local soft sore only, it most assuredly will be thus destroyed, and a healthy granulating surface will arise, which will quickly heal. To the women in Patience Ward this application is sometimes made in a thorough manner with great difficulty, owing to the folds about the generative organs, and hence the necessity of always applying the escharotic in their cases whilst they are under the influence of chloroform. I have several times, when the sore has been isolated, and, when, consequently, I have suspected its true syphilitic character, removed the sore and a considerable portion of the surrounding tissue completely, including the semi-hardened portion, and in all cases, without exception, even where there has not been the slightest other evidence of syphilis poisoning, have found the sore return on the excised spot. These experiments were made by me many years ago, and I was then brought to the opinion I have before expressed, that the moment of connection is the moment of the reception of the poison. So stretched is the delicate skin covering the penis in a state of erection, and so acutely sensitive does it become in the state of orgasm, that if a poison exist it is doubtless absorbed and taken up by the system immediately the organ comes into contact with the poison. In the female, particularly in the older prostitute, local manifestations of disease are rarer, and we seldom have to apply our remedies to their external organs, owing to the absence of that extreme delicateness and susceptibility to impressions observed in the younger women. If I am called upon to see a sore that has existed some weeks, presenting the typical manifestation of hardness, and particularly if there exist any enlarged glands in the groin, I consider the application of an escharotic to the sore useless; I generally, under these circumstances, order small doses of mercury at once, either by fumigation, by inunction, or internally in the shape of pil. hyd. Should, however, there be the slightest doubt in my mind of the true syphilitic character of the sore, I defer the remedy until the eruption appears, believing that I should do but little good by hastening its adoption. The good effects of mercury no one but those who wilfully shut their eyes to the beneficial effect of a therapeutic agent can doubt; that it cures the disease I do not believe, that it expedites the time of the patient's recovery I have not the smallest doubt.

In the pustular forms of syphilitic skin diseases, such as ecthyma and rupia, a grave question sometimes arises as to the propriety of administering mercury; there is no doubt that, in some cases, the patients are much benefited by a careful administration of the remedy. I have no faith in improving the general health, as it is called, previous to the exhibition of the drug. The patient appears to me to be suffering from the effects of the syphilis, and if that can be benefited by good diet, &c., there is no necessity for mercury; but if, as we often see, the patient continues cachectic and ill, with an increase in the size and number of the sores, despite the good feeding, then I have frequently given mercury with the most marked benefit. But, as a rule, it is undoubtedly not applicable. And here, for the first time in the treatment of syphilis, that invaluable drug iodide of potassium comes to our aid; for many years now it has filled up the gap just where a something was wanted in the treatment of syphilis, but to get the good effects of the remedy the doses, I believe, must be large. I have now for the last twelve or fourteen years given iodide of potassium in these cases of rupia, as in all forms of so-called tertiary syphilis, in doses of from ten grains to two scruples three and four times a day, with the greatest advantage. Many of my former pupils can, I am sure, call to mind what they considered my heroic doses of this drug. In advanced secondary or tertiary forms of this disease, I generally begin with the smaller dose, and if a decided effect is not produced upon the disease in the course of a few days I quickly increase it until I achieve what I know the drug will do, that is, induce a healing action in all spreading sores. Indeed, I may here mention that in some of the old-standing cases of tertiary syphilis I recommend the patients to use this salt with their food instead of common salt, and with great advantage. Whenever, indeed, patients are the subjects of what are known as "the gummy products" of syphilis, or with the so-called "cancer of the *face*"—a part of the body this tertiary form of the disease seems particularly to like—they are most quickly cured by the use of this drug; and if they are not quickly treated with it the most frightful deformity is left. Patients have just cause to blame their surgeons if they overlook this condition.

As regards the treatment of the soft sore or chancre, my rule is, and I feel more and more convinced of the propriety of the practice, to destroy the surface and obtain a healthy sore. To the student, or young practitioner, I would say—If you find that one application is not sufficient, do it again; and if a second does not answer, apply the acid a third time. But if the first application be made whilst the patient is under the influence of chloroform, even when the sore has attained a large size, the second is rarely required; or, if a second should be required, a third is still more rarely necessary. If patients are seen within the first week of infection two applications of nitric acid are never necessary, but unfortunately the women in Patience Ward rarely or never present themselves so early as the first week unless the sore has become much inflamed and irritated, either by neglect, bad living, or the most frequent source of irritation, viz., too frequent connection; in these instances they frequently apply for advice early, the sore or sores having become so irritated that further connection has been rendered impossible without extreme suffering. Under these circumstances a poultice is always applied over the vulva, and the patient kept in bed a day or two before any remedy is used. In some women, owing to the size of the soft sore or chancre when first seen, it becomes practically almost impossible to employ an escharotic to destroy its surface; in these cases, and sometimes in men who object to have the sore destroyed, or where the sore is situated so closely over the urethra as to threaten the laying open of that canal, I do not think it advisable to apply nitric acid. A lotion composed of ferrum tartaratum and extract of opium is a very good remedy, and one I use largely, but it has the disadvantage of staining linen, and, consequently, like nitrate of silver, must be used carefully. Sores seem to be benefited by this application when they are disposed to spread and are painful, but, as I have before observed, the natural tendency of this, as all other diseases of the human body, is to get well, and it is sometimes difficult to give the credit where it is deserved.—*Guy's Hospital Reports, Vol.* xv., 1870, *p.* 157.

82.—ON THE TREATMENT OF CONSTITUTIONAL SYPHILIS BY CREOSOTE AND CARBOLIC ACID.

By John Morgan, Esq., Surgeon to Mercer's Hospital, and the Westmoreland Lock Hospital, Dublin.

Having treated, during the last twelve months, a large number of cases of constitutional syphilis by the administration of creosote in full doses, I would draw attention to its value when given in the early stages of constitutional infection, and specially where mercurial treatment is inadmissible, or when patients are of the strumous diathesis.

It must be admitted that no one remedy or line of treatment can boast of unvarying success in this disease, not even mercury itself, however carefully exhibited. I cannot claim for the creosote treatment a uniform success, but I have found it most decidedly useful and curative in many instances of constitutional manifestations.

Various, indeed, have been the suggestions as to the nature of the syphilitic poison; if analogous to hydrophobia, or a ferment in the system, or an "algoid vegetation," as lately suggested, it is, unhappily, too true that the poison, once introduced, is so capable of causing an alteration of the whole organism that, to use the words of Lancereaux, "the individual has acquired the syphilitic constitution, and is no longer a normal being, but an individual deviating from the type, having undergone a kind of degeneration."

The cases in which I adopted this method were chiefly those suffering from the first influences of this "syphilitic constitution," such as mucous patches, roseola, papular eruption, and cachexia. The usual plan I followed was, keeping the patient in bed as far as possible, allowing a nourishing diet, and the use, at least every second night, of a warm bath, to which two ounces of carbolic acid were added; the patient should remain in this bath half an hour, or even longer, so as thoroughly to influence the skin. The creosote mixture I prescribed was—

℞. Creasoti, ʒj.; mucilaginis, ℥j. Tere et adde—Tinct. opii. ʒj.; aquæ menthæ pip., ℥vij. M. sumat coch. i., magnum, *quater in die.*

Usually within ten days an amelioration takes place, and gradually the signs fade. Should iritis or any acute sign appear requiring mercurial treatment, this remedy can be given as well as the creosote mixture.

The following selected cases illustrate successful treatment; of course all hygienic adjuvants must be allowed their share in the recoveries, such as regular hours, non-exposure to cold, moderation in the use of food and stimulants, equable temperature, &c.

The following exemplify cases where the primary and constitutional signs co-existed:—

Case 1.—*Never previously affected; papular eruption, complicated with struma.*—A patient, aged 19, strumous, and with enlarged glands in the neck, came under treatment for a primary sore, which resisted auto-inoculation, and was of one fortnight's duration. At the third week papular eruption appeared, accompanied by mucous patches and slight pains. Under the influence of creosote mixture and carbolic acid baths the signs disappeared in about six weeks.

Case 2.—*Never previously affected; papular eruption with suppurating strumous glands in the neck.*—A patient, aged 19, with two suppurating glands in the neck, came under treatment for a primary sore, which resisted inoculation, and was of one fortnight's duration. The sore was indurated, but there were no inguinal enlargements. In about three weeks from the appearance of the sore, and before it was healed, papular eruption and pains supervened. Creosote and carbolic baths effected a cure in about four weeks.

Case 3.—*Patches and roseolar eruption.*—A female patient, aged 20, affected for the first time with a non-indurated sore at the fourchette of one month's duration, without any inguinal enlargements. Suffered at the expiration of a month from copious patches and roseolar eruption; auto-inoculation performed once, was unsuccessful. There was no osteoscopic pains, and but little cachexia. Treated by carbolic acid baths and the creosote mixture.

Case 4.—*Papular eruption and pregnancy.*—A female patient, aged 26, affected for the first time with a large non-indurated sore at the vagina, capable of auto-inoculation, and with double acute, but not suppurating bubo. Suffered before the healing of the sore from a most copious papular eruption and cachexia, being pregnant about five months. Under the influence of the creosote mixture the rash disappeared, and her health improved. She produced a well-developed plump child at full-time; the mother remained in good condition.

Case 5.—*Roseolar eruption and pains.*—Patient, aged 17, suffering for two weeks from a sore for the first time; capable of inoculation and re-inoculation; was affected by copious roseolar cachexia and pains; the rash was very abundant and acute in its appearance. Treated, also, by creosote and carbolic baths.

The following illustrate some cases occurring subsequent to the healing of the primary sore:—

Case 6.—*Pustular eruption and cachexia.*—Patient, aged 28; six months after the appearance of the primary suffered from cachexia and pustular eruption of three weeks' duration before seeking treatment. Treated by the creosote mixture. The carbolic baths gave much relief to the pustular eruption.

Case 7.—*Papular eruption and cachexia.*—Patient, aged 20; six months after the primary suffered from papular eruption and cachexia; the character of the sore is not known. Treated, also, by creosote and carbolic baths.

Case 8.—*Ulcer of the uterus and roseolar.*—Female patient, aged 25; suffering for three weeks from roseolar and patches; has also a well-marked ulcer around the os uteri, but is otherwise in good health. The inguinal glands are enlarged. Treated by creosote and carbolic baths. The ulcer uteri was treated by topical applications.

Case 9.—*Sore, accompanied by suppurating bubo.*—Female patient, aged 18; suffered from sore at labium, accompanied by a suppurating bubo; and in six months developed patches and most extensive papular eruption. She was treated by tonics and creosote. In six months she contracted another sore at the fourchette, which resisted inoculation, although she was suffering at the time from papular eruption. Treated, also, on this occasion, by the creosote mixture and carbolic baths.

Case 10.—*Married woman infected by child-bearing.*—A strong healthy woman, married seven months, produced at that time a dead child, decomposed. She had observed for about two months blotches on the skin; never had any primary sore, but copious mucous patches. Treated by creosote and carbolic baths.

Case 11.—*Patient advanced in years, suffering severely.*—A respectable tradesman, nearly 60 years of age, contracted a sore last July; it occupied the greater part of the corona, and was auto-inoculable. For six months the man remained without a sign, when a most copious rash of a large papular form appeared, also pains of a severe character supervened, and the condition of the patient became miserable in the extreme. By the use of creosote, combined with iron and good diet, the patient convalesced rapidly.

I have also treated infected infants with drop doses three times a day, but in them mercury is so entirely satisfactory that no more practical remedy can well be used.

These cases, *illustrating* various forms of the affection, are interesting, and speak for the efficacy of the method; the larger the dose the patient will take the better, up to six or eight minims three times a day. I have healed some cases by creosote enemata night and morning; ten minims to two ounces of fluid, thus avoiding any objection as to taste.—*Medical Press and Circular, Jan.* 12, 1870, *p.* 17.

83.—ON A NEW METHOD OF TREATING GONORRHŒA BY INJECTIONS.

By Arthur E. Durham, Esq., Assistant-Surgeon to Guy's Hospital.

There is no doubt that gonorrhœa in itself is simply a local affection. And yet in the male subject it is rarely amenable to purely local treatment. Copaiba, cubebs, oil of sandal-wood, and other medicines, administered internally, are as much in vogue as ever, if not more so.

We very seldom have occasion to prescribe such remedies for gonorrhœa in the female. The disease, as a rule, is confined to parts which are easily and safely reached by injections, and over which the urine does not pass. The so-called specifics, taken by the mouth, are, therefore, neither necessary nor useful.

In the male the case is altogether different. The mucous membrane of the urethra is from time to time liable to serious irritation from the passage over it of acid urine; and the suffering part is neither easily nor always safely reached by injections as they are ordinarily used. Consequently, it is necessary, in the first place, to deprive the urine of its irritating acidity. And further, it is often deemed desirable to make the urine the medium through which remedies may be applied to the inflamed membrane over which it passes. The first-mentioned effect is produced easily enough by proper regulation of the diet and the free use of alkaline medicines. The second can only be accomplished, so far as we know, by the administration of drugs which are often very nauseous to the patient, and are notoriously liable to disorder the stomach and more or less affect the general health. In some cases, in spite of all the skill of the prescriber and all the care of the pharmaceutist, these drugs cannot be tolerated in any form, and the gonorrhœa almost comes to be considered the lesser evil. On these and other grounds, which are sufficiently obvious, the local treatment of gonorrhœa by soothing astringent injections is commonly recommended and adopted. But such treatment as ordinarily carried out very often, indeed, utterly fails to do any good beyond amusing the patient until the gonorrhœa has, as it were, worn itself out.

Most surgeons of experience who have carefully watched their cases of gonorrhœa will, I think, agree that in very many instances the prescribed injections have been of little real benefit; that in some instances positive mischief has been done; and that in comparatively few cases only have good results been manifestly effected.

The explanation is obvious. In the large proportion of the cases, if not in all, in which the treatment has failed to produce any beneficial effect it will be found that the injection has not regularly reached the whole of the affected part, and perhaps even has never done so on any occasion. The injection has simply flowed round the end of the syringe, and issued from the urethra at once. It has been gently injected, and has been prevented from penetrating far enough either by the swelling of the mucous membrane or by contraction of the muscular coat of the urethra.

In the cases in which mischief appears to have been done it will generally be found that the injection has been forced too far on, or has been prevented from escaping with due readiness from the orifice of the urethra. Under such circumstances it is easy to understand how gonorrhœal matter may be carried onwards, and infect parts hitherto healthy. Thus in some cases may be explained the extension of the inflammation towards the prostate, bladder, and testicles. Instances are not uncommon in which the use of injections is *followed by* cessation of the discharge and a generally comfortable condition of the urethra. The gonorrhœa of the anterior portion of the mucous membrane is, in fact, temporarily cured. And yet inflammation may spread along one or other or both of the vasa deferentia, and epididymitis or orchitis may supervene. A similar result, no doubt, occasionally happens in cases in which injections have not been used, and in which, therefore, the explanation suggested cannot hold good. But so far as my experience goes, gonorrhœal epididymitis is most frequently met with in cases in which injections have been carelessly or unskilfully used.

In the cases in which injections have manifestly proved curative it will be found, I believe, either that the inflammation has been comparatively slight, and has not extended far along the urethra—that is, not further than about an inch—or that unusual care and skill have been exercised by the patient in carrying out the directions given him, and that the directions given have been explicit and judicious.

It is all but useless, and it may prove worse than useless, to prescribe an injection, and simply to tell the patient to use it so many times a day.

The directions given, I believe, by most surgeons of experience are somewhat as follows. The patient is told to insert the nozzle of the filled syringe into the urethra; to support the penis, and to press the edges of the orifice ot the urethra gently against the syringe, so as to prevent the immediate escape of the injection; to compress the urethra in the perineum, or at any rate at a point beyond that to which the inflammation extends, in order to prevent the gonorrhœal matter being carried onwards; and then to inject gently until a sensation of distension of the canal is produced. The fluid thus injected is to be retained for a minute or two, and then, by the removal of the syringe, allowed to escape. This process is to be repeated several times successively.

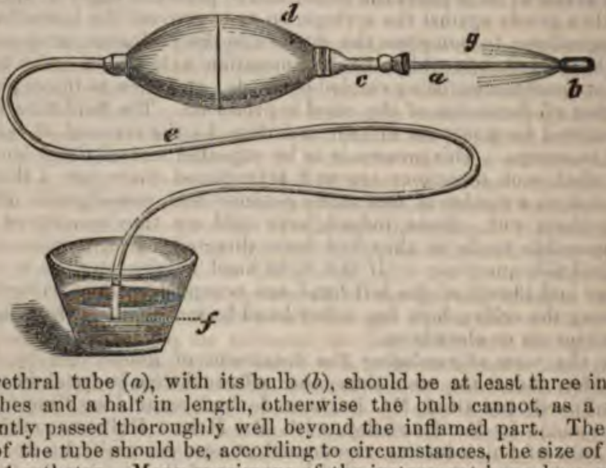
Now, that such directions are well intentioned there can, I think, be no doubt; but as a matter of fact many patients find considerable difficulty in carrying them out. Some, indeed, have told me they considered it physically impossible to do as they had been directed. I have more than once been asked this question:—"If the right hand manipulates the syringe, and the finger and thumb of the left hand are occupied in supporting the penis and closing the orifice, how can either hand be made to compress the urethra in the perineum or elsewhere."

[With the view of rendering the treatment of gonorrhœa by injections easier, safer, and at the same time more effectual than it certainly appears to be as ordinarily practised, Mr. Durham devised, some long time ago, an instrument made by Mr. Hawksley, with Mr. Baker, Holborn, consisting of a slender tube of vulcanite (*a*), terminated at one extremity by an elongated bulb (*b*), and at the other connected by means of the elastic tube (*c*) with the small hand ball enema syringe (*d*), which is filled through the elastic tube (*e*). At the junction of the slender tube (*a*) with the commencement of the bulbous expansion is a ring of minute perforations, which are made in such direction that when the syringe is in action the fine streams of fluid ejected through them pass backwards and upwards, as indicated in the figure (*g*), and not straight onwards.]

The method of using the syringe, and the principle on which it acts, require but little explanation. The heavy extremity of the tube (*e*) is sunk in the fluid to be injected, and the syringe is filled. The tube (*a*) is then introduced, well oiled, into the urethra until the bulb has passed a little beyond the point to which the inflammation is known or supposed to extend. The hand ball is then gently compressed, and the fluid issuing from the perforations flows from behind forwards, and escapes from the urethra after having safely and perfectly washed over the inflamed mucous membrane. The fluid is prevented from flowing onwards towards the bladder by the closeness with which the inner wall of the urethra becomes applied to the bulbous extremity of the tube. The stream can be kept up as long as may be considered necessary, or a different fluid may be used without the inconvenience, and perhaps pain, of removing and reintroducing the instrument. Thus, after having thoroughly washed the mucous membrane by a stream of plain water, the supply tube may be transferred to the lotion bottle, and an astringent solution applied. The outward flow may, of course, be temporarily checked, if thought desirable, by pressing the lips of the urethra against the tube; and thus the mucous membrane may be put somewhat on the stretch, and the fluid may be retained in contact with it, instead of simply washing over it.

My experience during the past two or three years, in about seventy cases, has amply proved the correctness of the principles upon which the instrument, thus briefly described, was designed to act. The results of its use have been most satisfactory.

But experience has also suggested some slight improvements on the original pattern, and has shown the great importance of attention to certain points in the construction of the instrument. I have heard of several cases of failure, and of one or two cases of some slight mischief, which have arisen from the use of faulty instruments made in imitation of that I am describing, but modified by the makers without the guidance of surgical knowledge. At the risk, therefore, of seeming tedious, I have ventured to describe in detail, and somewhat minutely, the instrument in its improved form. The instrument, as I believe it should be made, and as it may now be obtained,[*] is pretty accurately represented in the figure.



The urethral tube (*a*), with its bulb (*b*), should be at least three inches or three inches and a half in length, otherwise the bulb cannot, as a rule, be conveniently passed thoroughly well beyond the inflamed part. The slender portion of the tube should be, according to circumstances, the size of a No. 3 or a No. 4 catheter. Many specimens of the instrument have been made far too short to be serviceable. The bulb should be olive-shaped, and about three-eighths of an inch in length; it should slope gradually and uniformly into continuity with the slender portion of the tube, and should present no sharp edge or shoulder. Any such sharp edge may cause abrasion of the mucous membrane in withdrawing the instrument. The greatest circumference of the bulb should be equal to that of a No. 7, 8, or 9 catheter. The size to be employed must depend upon the condition of the urethra at the time the instrument is used. It is easy to change one urethral tube for another, the rest of the apparatus remaining the same. A small and a large-sized urethral tube may be obtained with each syringe, or the size may be selected. The largest size which will pass through the orifice of the urethra, without much difficulty or pain, should be employed. It will be recollected that the calibre of the urethra is smallest at the orifice, and consequently that the bulb which has passed through the orifice may be passed on along the canal with comparative ease. If the bulb is too small to be well grasped by the urethra, it will not so effectually prevent the onward flow of the injection towards the bladder as it should do. The portion of elastic tube (*c*) should be of sufficient calibre to slip easily over the urethral tube, so as to admit the changing of the tube if necessary; it should be so short as to bring

[*] Messrs. Krohne as well as Mr. Hawksley have taken great pains in carrying out my suggestions; and by them, as also by Mr. Millikin, and other makers, the instrument is now supplied.

the hand ball conveniently near, and to enable the urethral tube to support the penis in the desired position. The left hand is thus left free to compress the urethra whenever needful.

The facility with which this instrument can be used, and the thorough and effectual manner in which by means of it the urethra can be washed out, are sufficiently obvious. Theoretically, it appears to afford a ready method of treating gonorrhœa on scientific principles. Practically, as I have said, it has been already proved to be of very great utility. And I have no doubt that further experience will still more fully establish its value.

It may be used with advantage, I believe, in almost any stage of the malady. But its use is obviously most appropriate in the earlier and later stages.

During the acute stage, when the mucous membrane is much swollen and excessively tender, the introduction of the instrument may be too difficult and painful. But from my small experience of its use in this stage I am inclined to believe that if only the introduction of the instrument can be accomplished there is no stage of the malady in which more speedy and obvious benefit is obtained. In gonorrhœal ophthalmia, the more acute the inflammation the greater the need for the continuous washing away of the matter and the application of appropriate remedies; and the more evident, too, is the beneficial effect. In urethral gonorrhœa the conditions are sufficiently similar to indicate similar need, and the probability of similar good result. The old method of injection is absolutely inapplicable, because the fluid cannot be injected far enough, or if injected, is certain to carry on the infectious matter and spread the mischief. Besides, the repeated introduction and withdrawal of the nozzle of the syringe, which are necessary, cause repetitions of severe pain to the most tender part of the urethra. But in the method I am advocating, when once the bulb of this instrument is fairly passed beyond the inflamed portion of the mucous membrane, little or no pain is occasioned, and the gentle continuous current of tepid water or soothing injection which can be kept up is most pleasant to the patient, and directly beneficial to the suffering part.

In the earlier and later stages of the malady—that is to say, before the acute stage is reached and after it has subsided—the introduction of the instrument is easy; and, as a rule, the good effects of its use soon become manifest.

I have been assured by several patients whose personal experience in gonorrhœa has been considerable that the disease has been absolutely cut short and prevented from becoming established by the free use of mild astringent washes as soon as the first threatening indications have shown themselves.

I have seen many cases in which the disease has been cured in from ten days to three weeks without the supervention of any acute symptoms.

I have also seen many cases in which, after the acute stage has been passed, the cure has been completed in a comparatively short space of time—in some instances in the course of a few days,—and that without the internal administration of any of the so-called specifics.

It is unnecessary to dwell upon the obvious fact that, if the inflammation has extended along the urethra beyond the point to which the tube can be passed, it is not to be expected that the use of the instrument can effect, although it may aid, the cure.

The stage of the malady and the condition of the urethra must determine the nature of the solution it is best to employ. In every case, however, before using any solution it is best to wash out the urethra thoroughly by a stream of tepid water, and the injection should always be practised immediately after urine has been passed.

If the urethra is but little irritable, as in the earliest and the later stages, astringent solutions may be employed with the greatest advantage. But these solutions should not be too strong. One to two grains of alum, or two to four grains of sulphate of zinc, or a quarter of a grain to a grain of chloride of zinc, or the same proportion of nitrate of silver to an ounce of water, will, I think, be found to constitute solutions of sufficient strength. Continuous washing with a weak solution is better, as a rule, than a short application of a stronger one. If the urethra is very irritable, a solution of acetate of lead, with a small quantity of acetate of morphia, or extract of belladonna, is useful. It seems to me very probable that a lotion containing copaiba in suspension might prove very applicable in some cases. But I have not yet had sufficient experience on this point to enable me to make any decided statement.

It is unnecessary to enter upon the discussion of the general treatment and management of patients suffering from gonorrhœa. My object in the present communication has been simply to describe and recommend a method of local treatment which at one period or other in the course of this troublesome malady is likely, I believe, to prove of service, at any rate in a very large proportion of cases.

It would not be right to conclude without stating that many years ago, Mr. Hilton devised and recommended a syringe having a long nozzle terminated by a bulbous extremity. His object was to a certain extent similar to that which I had in view in designing the instrument I have described.

I venture to believe, however, that my instrument possesses advantages which are peculiarly its own, and that, used in the method above recommended, it will be found of considerable service in the treatment of this common and often very troublesome malady.—*Guy's Hospital Reports*, *Vol.* xv., 1870, *p.* 471.

MIDWIFERY,

AND THE DISEASES OF WOMEN AND CHILDREN.

84.—REMARKS ON A MODE OF APPLYING THE SHORT MIDWIFERY-FORCEPS, PRODUCTIVE OF LESS PAIN TO, AND DISTURBANCE OF, THE PATIENT, THAN THAT USUALLY ADOPTED.*

By Dr. James Braithwaite, Leeds.

There is a large class of cases, especially in primiparæ, in which, perhaps from some slight disproportion between the head of the child and the pelvis of the mother, from constitutional debility, or from accidental rupture of the membranes early in the case, the labour is exceedingly tedious, and the recovery afterwards correspondingly tardy and imperfect.

Now although, as an obstetric instrument, the forceps is everything that can be desired in cases of a severe type, yet for those in question it is hardly suitable. The instrument is seldom at hand when wanted, and has to be sent for, to the great alarm of the patient and her friends. It is, moreover, necessary, before it can be used, to move the patient to the edge of the bed, to empty the bladder, and to make other preparations, which arouse her fears still more; and they are not lessened if she hear the metallic click of the blades.

It is unnecessary for me to picture to you the questioning one has to undergo from the friends, the trouble required to calm the fears of the patient, and the unjust blame to which we may be subjected by our female critics for using instruments which "never were needful when they were having a family." You will doubtless be able to recall to mind times when you have waited many weary hours, wishing you had some means of assisting the descent of the head, yet where you hardly liked to apply the forceps, though the waning powers of the patient made you anticipate such a termination to the case. Doubtless, it has been during the ample time for thought unwillingly enjoyed at such times, that the vectis was invented—the whalebone loop, the suction-tractor; also, more recently, Sheraton's steel fillet and Debenham's whalebone fillet. There is no doubt, however, that none of these instruments can compare with the forceps for safety to both mother and child, if only the latter can be deprived of its objectionable features. If, although really an instrument of two blades, we can have one possessing the portability of the vectis, so that when going into the country or to a place some distance from home, this blade can be slipped into the breast-pocket, and there remain out of sight, and without the chance of the noise which would arise if two blades were so placed; if we can apply this blade almost without the knowledge of the patient, without causing her the least pain during its introduction, and without disturbing her position in the bed, unless too near its foot to allow of the proper movements of the handles during extraction—it appears to me that we shall have all we want. There would be, moreover, this additional advantage, that one instrument would do for all cases, whether those in which a little judicious assistance will be of great advantage to the patient, although not *absolutely* necessary to the termination of the case; or serious cases of impaction.

I am not writing a paper advocating the very frequent use of the forceps; but I cannot here refrain from reminding you how fatal ergot is to the child, when given in tedious labours from disproportion; and how preferable aid of the nature we speak of is, with the view of saving the life of the child.

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* Read before the Midwifery Section at the Annual Meeting of the British Medical Association in Leeds, July, 1869.

Acting upon the hint conveyed by Sheraton's steel fillet, I have had an instrument constructed, consisting, as you see, of an ordinary pair of short forceps-blades, accurately adapted to one another—the convexity of one to the concavity of the other, and connected firmly together in this position by a metallic clip, which is easily removable when it is wished to separate the blades. This is the position in which they are intended to be maintained when not in use, and during introduction. When not in actual use, the blades are protected by a small leather case. They are used in the following way. The external parts being separated by the first two fingers of the left hand, the blade is to be slipped in between them (and it is sufficiently narrow for that purpose). Keeping the point in close contact with the head, it is to be passed directly into the hollow of the sacrum, precisely as the vectus is introduced. In the ordinary position of the fœtal head, the point of the blade will now be over the left eye but above it about two inches. The blades must now be separated, and glided one downwards and the other upwards, until, as regards the pelvis of the mother, a line running from the concavity of one blade to the concavity of the other would be exactly at right angles to its antero-posterior diameter. With exercising a little pressure, they will now lock, and the case may be proceeded with. In the first or common position of the fœtal head, the upper blade will be on the right temporal ridge, just within the line of the hairy scalp; and the lower blade just behind the left ear. In the second position, this will be reversed, and the lower blade will be just behind the right ear. The occipito-posterior positions nature will have almost invariably converted into occipito-anterior by the time the head is sufficiently low down in the pelvis for the application of the short forceps. To those who may object to the parts of the fœtal head grasped in this way of using the forceps, I may reply as follows:—

1. I have not recommended its use in this position, except in the less severe class of cases. At the same time I may say that I have applied it at least forty times in this position, and that some of these cases were very difficult; and only in one case was there any bad result for which I could blame the forceps—the child dying in convulsions soon after birth. This might have resulted simply from the severe labour.

2. The long forceps seizes the child in almost exactly the same position, being applied at right angles to the pelvis of the mother, without reference to the position of the child's head; and, when the head has been brought down by them into the cavity of the pelvis, it is not thought necessary to alter its position on the head, or to substitute the short forceps applied over the ears.

3. Compression is effected by elongating the head exactly in the direction in which nature does it. A child's head is not compressed laterally in labour, it is elongated, the anterior part of the skull being flattened.

4. Compression is not effected in a dangerous direction. It is not along the same plan as it would be if from the forehead to the occiput. The line of pressure extends diagonally across the head, and from the top to the base. The lower blade lifts, as it were, the occiput into its hollow; whilst the upper slightly compresses the vertex. At the same time, the hold of the instrument being to a great extent a side to side one, we have almost all the advantages of the latter mode of grasp, in depressing the vertex, and rotating the head under the pubic arch when the time for that movement occurs.

I need hardly say that there is nothing to prevent the blades being passed separately in the usual manner, if thought desirable from the degree of impaction being considerable, and the difficulty in extraction expected to be great.

Before concluding, I will enumerate the advantages which are offered by the use of this form of forceps; and, in so doing, I leave the subject to your judgment.

1. *It is light, portable, and can be carried in the breast-pocket, where it is invisible, and where it cannot be lost in travelling.*

2. *Its application is much more rapid than that of the ordinary short for-*

ceps; indeed, I think a minute and a half or two minutes is generally sufficient.

3. It causes so little annoyance to the patient, that its introduction and application to the head may be said to be painless. Now, this certainly cannot be said of the ordinary way in all cases; for when the head is distant an inch and a half from the perineum, the blades have to press considerably upon the external parts of the mother to get the points round the convexity of the head.

4. It is much safer to the child than the use of ergot, which should be confined to those cases in which the sole cause of delayed delivery is sluggish pains.

5. It is unnecessary to disturb the position of the patient, unless she be too near the foot of the bed. It is also needless to empty the bladder, unless we can feel it sensibly distended with urine.

6. Compression is effected naturally, the elongation of the head being assisted. I may here remark that, unless a certain amount of compression be exercised by forceps, the traction-power is confined entirely to the tips of the blades, and injury is likely to result.

7. A peculiarly distressing accident sometimes results from the use of the short forceps across the ears, viz., paralysis of the portio dura. There is no risk of this when it is applied in the way of which we are speaking.

8. The same instrument may be applied in the ordinary way in severe cases of impaction, if the operator think it desirable.

Of course, any ordinary pair of forceps can be applied in this way, except that each blade must be introduced separately.

The best way of avoiding rupture of the perineum is, as the head presses on the external parts, to unlock the blades, and to let the handles cross one another as much as they will. The blades will now lie closely adapted to the head, and will not stretch the perineum at all. At the same time, they can be reapplied instantly, if necessary. This is better than entirely withdrawing them, which should only be done when the head is pressing well upon the perineum and stretching it; the pains being sufficiently strong to render it evident that no further artificial aid is required.*—*British Medical Journal, Dec.* 25, 1869, *p.* 673.

85.—CASES OF SUCCESSFUL VERSION AFTER FAILURE OF THE FORCEPS.

By Dr. J. Braxton Hicks, F. R. S., Physician-Accoucheur to Guy's Hospital.

[So many cases have now been published in which, after the forceps had been employed unsuccessfully, delivery of a child has been accomplished by turning, that the advantage of turning in such cases has been quite established.]

If there is considerable doubt as to whether the forceps will fail, I would always prefer version as the primary operation, provided the state of the uterus were favourable, and that chloroform could be given. But where there is a fair chance of the forceps succeeding, I should always try it first.

The analysis of the cases show four of vertex presentation, where forceps was tried and failed, but by version the child was delivered. Three of these lived; in the other, although its heart beat at birth, yet respiration could not be established. In this last and in one of those that recovered inflation of the lungs was employed artificially. In one case the head presented by the face; vectis and forceps were unsuccessfully employed, but version succeeded so far as delivery was concerned, but the child was dead. This case is, perhaps, scarcely one of the class to which Sir J. Simpson referred, but the treatment may, I think, be advantageously extended to some face presentations, particularly where the brim is small. In one case version was tried in a succeeding labour as the primary operation with complete success. I have to this added one case in illustration of the employment of version as a primary operation where craniotomy had been employed in a former labour. In this case the child's life was not saved; still, it clearly shows how closely these cases may be selected when guided by careful consideration of the history and actual relations of the head to the pelvis as determined by manual examination.

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* *These forceps* are made by Messrs. Joseph Gray & Co., of Sheffield.

Case 1.—*Failure of forceps; version; child's heart beating, but soon ceased.*—Mrs. —, Irish, aged 36, mother of nine children, five delivered by instruments, all of them being still-born; two born by natural efforts lived. She had been in very severe labour for twelve hours. I found the head at the brim; a scalp tumour had formed; head resting on pubes; as far as could be ascertained, the antero-posterior diameter of the brim was between three and three and a quarter inches, the right side evidently straighter than the left. The outlet was of natural size. Head was in occipito-posterior position, slightly inclining to forehead presentation.

I applied the long curved forceps, without chloroform, and tried to readapt the head, using traction up to the limits of what I considered safety, but found impassable resistance. Turning was then performed, chloroform having been given, and after some little difficulty the head again was engaged in the brim. By firm traction it slowly passed through, but with considerable resistance, and seven or eight minutes elapsed before the head was born. The funis was pulseless, but the heart slowly beat. Laryngeal catheterization was employed, and in a short time the beats reached to 120 p. m., but respiration could not be established, and the heart gradually ceased action. The rest was natural. The examination of the child showed nothing but extreme venous congestion of the pia mater, and a large sanguineous scalp tumour.

The patient recovered well.

Case 2.—*Failure of forceps; version successful; child living.*—Mrs. —, aged 25, in her third labour. The first labour was moderately long; in the second the arm presented, the child was turned and delivered alive. Labour had been on twenty-four hours when I saw her; the os uteri fully expanded for six hours. The pains had been good, without advance, the head resting on the pubes. I tried to alter its position as much as possible, from the exterior and the interior, without success. Forceps was then applied, and the head was rotated in many directions, while traction was employed as firmly as considered safe, but without any advance. Turning was then employed, and after a very firm traction the head passed the brim, and a living child was born, which cried lustily before I left. It was of full size.

The traction employed to bring the head through the brim was as severe as I have ever employed, indeed, more than one would think it possible a child could bear without injury; still, as the child must have died otherwise, I considered it worth the risk.

The mother did well, and was delivered by version next time of a live child after another labour of twenty-four hours without progress.

Case 3.—*Failure of forceps; version successful; child living.*—Mrs. M., a stout woman with large abdomen; has had four labours, all the children males, all born by assistance of forceps; two living, two dead.

She had been in labour thirty hours when I saw her. The pains had been strong till lately, with pulse rising; tongue dry; and she was beginning to be exhausted in strength and spirits. The head had not entered the brim. The transverse diameter of the cavity seemed less than the antero-posterior diameter, which appeared good. Forceps were employed, but they pressed very firmly against the sides of the pelvis. After employing as much traction as I dared I advised version, which was performed by the resident obstetric clerk, Mr. Eager. Much difficulty was experienced in bringing down the foot and raising the head, in consequence of the firm contraction of the uterus. Chloroform was then administered, and the hand passed up again to see the cause, when a kind of hour-glass contraction was found above the head, preventing its rising. I passed slowly my hand by it and retained it *in situ*. Shortly, as I have before found, the spasm relaxed, and then, bringing down my arm, seized the foot in its descent, and brought the breach through. The body very soon was born, but very much difficulty was found to the withdrawal of the head. However, by steady pulling, it passed in from one to two minutes. The child was living, and did well. The mother recovered also well.

Case 4.—Failure of forceps; version successful; child alive.—Mrs. —, aged 25, primipara. When I saw her she had been in labour twenty-four hours with severe pain, which latterly had become continuous. The fœtal head had very slightly entered the brim, but was pressed down firmly on it by the persistent action of the uterus. The pulse was quick; tongue furred and dry. The antero-posterior diameter was calculated at three and a half inches by digital measurement, and the side loops were imperfect. I scarcely expected forceps to succeed, but they were put on, but no amount of justifiable traction produced any result. She was, therefore, put under chloroform, and the resident obstetric clerk, Mr. Sells, turned. Some difficulty was experienced from the state of the uterus in accomplishing the revolution of the fœtus. External pressure, however, lifted up the head to the fundus, upon which the breech descended, and the uterus extruded the body of the child. But the head remained so fixed in the brim that it seemed impossible a live child could be born. However, after a few minutes, the head slowly descended through. There was also much obstacle in the pelvic cavity, but eventually the head was wholly delivered. The heart was pulsating. By warm bath and laryngeal catheterization I was successful in establishing respiration, and the child lived.

The mother recovered excellently.

Case 5.—Face presentation, chin posterior; vectis and forceps tried without success; delivery by version; child dead.—Mrs. —, Irish, aged 35, primipara; small woman; pelvis rather below standard; the face had been presenting some hours, but pains moderate. The forehead had been anterior rather to right side, but not fixed, and it seemed easy to move the chin round. The waters had escaped some time, and the uterus grasped the child tightly. The os was fully open.

The vectis and forceps had been tried without results, the latter slipping, and an attempt also had been made to turn, but the uterus prevented it.

When I saw her I attempted reducing the face to a vertex presentation. But although I nearly succeeded, yet ultimately the face presentation remained. I again applied the forceps, but, as they slipped and no movement was obtained, I withdrew them, and giving chloroform, was able to push the head aside sufficiently to bring down the leg, and in a very few minutes the child was born, but there was no sign of vitality in it. The rest of the case was natural.

Case 6.—Failure of forceps; version; rupture of the uterus; head detached; death of mother.—I did not see this case till the woman was dying. I found the head left in uterus, the uterus ruptured in front through half its length. I endeavoured to deliver the head by the cephalotribe, but the patient died before I could do so.

I found three medical men had been engaged at the case. She was an exceeding fat woman, a multipara, and, as the pains had been ineffectual, the forceps was employed. The uterus was much anteverted, but the brim did not appear contracted. However, as the head did not advance, version was employed, with great difficulty from the contracted state of the uterus. During version the uterus ruptured. Suddenly she became collapsed and gasping; renewed efforts were then made to deliver, and the body separated from the head. In this state I first saw her; I tried first the crotchet and then cephalotribe, but it was a very hard head, so that its seizure was difficult, and, as she was rapidly sinking, I gave up further attempt as useless.

The obliquity of the uterus and the ossification of the fœtal head seemed to produce the difficulty in delivery of the head; and the rigid state of the uterus coupled with, probably, some degeneration of its fibres, rendered turning a fatal procedure.

Case 7.—Craniotomy in first labour; version in second; child dead.—The patient had been in labour eighteen hours, during which the os uteri had opened slowly, and had been fully dilated about six hours when I saw her. The pains had been all through very forcing and painful. I found the uterus firmly and continuously contracted around the fœtus, with slight rhythmical pains. She had a distressed anxious expression. The head was firmly fixed in the antero-posterior diameter, so as to require some little pressure to raise it, when it moved with a jerk. She was anxious to have chloroform, which was given her. I then carefully measured the pelvic diameters, and found the antero-posterior to be about three inches and a half. There was deficiency on the right side of the oblique. Comparing the head with the pelvis, I felt certain it could not pass by forceps, and, as the only other chance of saving its life was by version, the resident obstetric clerk, Mr. Pearse, turned without real difficulty, though slowly, in consequence of the state of the uterus. When the head again touched the brim it remained fixed about four minutes, the face and occiput touching the sides of the cavity firmly; but after fair traction the head was delivered, though too late for life to be saved. Artificial inflation was useless.

The adherent placenta was detached, but she did well.—*Guy's Hospital Reports, Vol.* xv., 1870, *p.* 501.

86.—ERGOT OF RYE AS A THERAPEUTIC AGENT.

By Dr. J. Waring-Curran, Dublin.

Although the chief uses of ergot of rye are, for the most part, confined to those affections of the uterus over which it seems to exercise a specific action, I have been induced to give extensive trial of the drug in other complaints; and as I have found most satisfactory results from its adminstration, the following paper has been written in the hope that ergot of rye may be more frequently exhibited as a medicine, and that the practitioner may be reminded that in it he has a most potent therapeutic agent of reliable efficacy in other diseases, apart from those affecting the uterus.

In Parturition.—The physiological action of ergot of rye upon the parturient uterus in exciting contractions of the unstriped muscular fibre is familiar to all, and the *constant* pains which it induces so characteristically differing from genuine labour pains. This action is entirely produced through the ganglionic nervous system by affecting the muscular coats of the blood-vessels, and thus diminishing their calibre. We are told by Dr. Brown-Séquard, as the result of a series of experiments made by himself, that the blood-vessels of the pia-mater of a dog under its influence became smaller, and that the reflex action of the spinal cord was diminished to a great extent.

In three-fourths of the labours attended by myself, I have exhibited ergot with most salutary results. I have never observed any ill effects from it, when judiciously given, to either mother or child. I never attempt it unless the os is dilated and dilatable; and primapara cases, if the pelvic development be natural, and the os be not rigid, never prevent my giving it. The cases we read of, and lecturers have told us about its destructive effects upon the mother, and its poisonous properties to the child, experience teaches me, must have been cases where ergot was improperly given.

I have used extensively the liquid extract prepared by the action of ether and spirit upon powdered ergot, and the tincture too; but on neither have I the least reliance. Some time ago I was sent to assist a medical gentleman; upon my arrival I found the child's head in the vagina, and complete inertia; the gentleman in attendance told me he had given the liquid extract in large and repeated doses without any appreciable therapeutic action. I immediately prepared a fresh infusion—the preparation I invariably employ—added to it some borax; in twenty minutes its action commenced, and within an hour the child was born. I do not say that in such a case the short forceps would not have done equally well; but people, as a rule, have, in private practice, so great a hatred to instrumental deliveries, and are so apt to attribute every little trivial subsequent complaint to their use, that I have not used the forceps as frequently as formerly.

When studying midwifery, some years ago, at the Rotunda Lying-in Hospital, Dublin, I painfully noticed—and the observation has made no little impression upon me—that the students and embryonic midwives were compelled to allow poor women to continue in labour, hour after hour until nearly exhausted, because the rules of the institution forbade their interference, unless an over-fed and morose female superintendent was awaked and consulted. The educated student, revolting at such consultations, allowed the case to linger in preference. As I now reflect, I have not a particle of hesitation in saying that many of those confinements might have been safely and expeditiously concluded hours previously, had the best informed and senior student been permitted to prescribe a dose of ergot. To keep a woman five minutes in labour longer than she might be is unnecessary and a great cruelty. The freshly prepared infusion with borax will demonstrate its action in twenty to twenty-five minutes, or earlier if the anterior os be gently irritated with the forefinger. So far as ergot is related to the accoucheur, I should feel disappointed arriving at the bedside of a parturient woman without it. I write not inconsiderately making this remark, for I thoroughly deprecate the exhibition of any drug given indiscriminately and recklessly, and can thoroughly comprehend the issue of a case of distorted pelvis, or rigid os (when antimonial wine is requisite) where any could be found foolish and inexperienced enough to prescribe ergot.

Flooding after Labour I have never failed arresting by a full dose of infusion of ergot, at the same time lowering the patient's head, elevating the pelvis, and firmly applying the padded binder. I have observed in the practice of others that plugging the vagina had in several instances to be superseded by a full dose of ergot of rye, and that with the desired effect.

Menorrhagia is a term now so inaptly applied to the varied forms of uterine hemorrhage, requiring different treatment, that I purpose devoting a paper to this subject alone, and to the effect which heat along the dorso-lumbar region produces by inducing hyperæmia of the vasomotor nerve centres related to the uterus, and through the increased currents along the nerves, causing contraction of the uterine vessels, and thus arresting menorrhagia; but here I must confine myself to those varieties of uterine hemorrhage best cured by the ergot of rye. What I am pleased to call the *strumous abortive predisposition*, met with in patients of a scrofulous habit, who have become very frequently impregnated, who suffer from constitutional debility, from leucorrhœa when the menorrhagia has exhausted itself, or when arrested by treatment, demands the exhibition of ergot when the hemorrhage is present, which it rarely fails to command. Menorrhagia from obstructive cardiac disease at either the mitral or aortic orifices, congesting the pelvic viscera, that associated with a diseased portal system, that consequent upon a scorbutic state of the system, and genuine menorrhagia—*i. e.*, an increase of the catamenia continuing for an unnatural lengthened period and returning before the the time calculated upon, without organic lesion, are the forms or varieties of menorrhagia to be benefited, to be checked and cured by the freshly prepared infusion of ergot and borax. Menorrhagias dependent upon ulceration of the os uteri, due to the existence of polypoid growths, or owing to the presence of malignant excrescences, or the effect of retroflexion of the uterus, do not come among the category of cases to be affected beneficially and permanently by ergot of rye, although I have used the drug for the purpose of pressing down the growth of a polypus to be snared, a malignant or an ulcerated surface to be cauterised.

Amenorrhœa occurring in the plethoric is best treated for a few days with strong salines, aloetic purgatives, or medicines which act upon and increase the circulation of the large intestines, and then closely followed by two-ounce doses twice a day of the infusion of ergot, prepared according to the British Pharmacopœia. Amenorrhœa in those who have only *changed* a few times, and in those of tender years, and amenorrhœa of chlorotic women, should have citrate of iron, spirits of ammonia, and tincture of nux vomica administered for three weeks in full doses, and the fourth week be ordered hip-baths, and from one ounce to an ounce and a half doses of the infusion of ergot thrice daily.

In these cases, as in the parturient, vomiting is sometimes induced, being the direct effect of the drug upon the muscular coat of the stomach. Accordingly, to prevent this, I direct the albumen of an egg or some gruel to be partaken of before the medicine, and this with good results invariably.

Hæmoptysis I have frequently arrested for a time with ergot, with good effect in the commencement of phthisis; but I should not be disposed to prescribe it lest vomiting should be set up in the hæmoptysis which sometimes accompanies the advanced stages of pulmonary consumption.

Hæmaturia.—I have found great benefits from the tonic effects of ergot upon the blood-vessels, in causing a diminution of their calibre, and arresting hemorrhage from the kidney. I can safely say that its effects are superior to either turpentine or the vegetable acids in this complaint, and that the same observation applies to the tonic effect it produces on the muscular fibre of the bladder in those cases of general atony which come under our notice, and for which so little permanent good can be done.

Constipation of the Paralytic is strikingly remedied, when the most powerful cathartics fail, by occasional doses of ergot, which sensibly diminish the amount of blood present in the spinal cord and its membranes, give tone to the muscular fibre of the bowels, and thus propel the fœcal matter to the rectum.

Fatty Degeneration of the Heart.—I have had and still have two patients suffering from this complaint, who are very materially assisted by occasional doses of ergot. I can only compare its tonic virtues to that of carbonate of ammonia, but as experience is limited I cannot write emphatically.

As an Injection in Gleet I believe I have been the first to use the infusion of ergot in this complaint, and I have not yet failed. I employ the Pharmacopœia infusion, and direct its being injected three and four times in the day. I observe the tonic power it imparts to the urethra.

When the injection is thrown along the urethra, I direct the meatus urinarius to be firmly pressed against the nozzle of the syringe, so that the ergot may lie for five minutes in the urethra; for experiment has taught microscopically that the first effect of ergot locally applied to a raw surface, is 1st, to increase the circulation; 2ndly, to suspend the circulation; 3rdly the circulation recovers itself, is still disturbed, and irregular, or spasmodic, showing that the contraction and relaxation of the muscular coats of the arteries are subservient to the will of the ergot, hence, undue contraction producing gangrene. These series of phenomena upon the blood-vessels of the urethra, at all events set up healthy action and cure a foul disease.

I hope this paper may have the effect of bringing more prominently forward one of our most valuable drugs, that in the diseases I mention the practitioner in extensive practice may be induced to test its value and give us the result of his experience, for it is only by combining results that accuracy is established. To the point: an accomplished surgeon, at my suggestion, has employed infusion of ergot as an injection in a case of chronic catarrh of the bladder. The reports of the case are valuable, but they are not corroborated by other cases, hence my delicacy in alluding to what another will publish; for in other similar cases its tonic virtues may not prove as effectual.

P. S.—The inconvenience and trouble of preparing a fresh infusion of ergot on every occasion—the tincture and extract of the Pharmacopœia being unreliable—combined with the fact that the patient knows the nature of the loathsome dose about being administered, has induced my consulting Mr. Edward Long, of the eminent firm of Hamilton, Long & Co., of Dublin, regarding the great want of a new and reliable preparation. I am happy to state that in a few weeks a great desideratum will be accomplished, and that the profession will have an opportunity of testing the power of a new preparation which will have the advantages of being *sweet, concentrated,* and *permanent;* the ergot, being first exhausted with glycerine, which is strained off, the residuum is digested in spirits, and then evaporated to the consistence of syrup. The two solutions are joined, so that we get all that is soluble in water—infusion, and all that is soluble in spirit—extract, tincture, &c.; but a more full and practical description of the method of this new preparation of ergot I retain for a future contribution, when the utility and therapeutic power of the preparation is established.—*Medical Press and Circular, Nov. 17, 1869, p. 397.*

87.—NOTES ON ERGOT.

By Dr. Charles Ronayne.

Ergot of rye is one of those drugs possessing very decided and powerful actions, but usually very uncertain in its effects, and this I think may be in a great measure attributed to the faultiness of its preparation.

It unquestionably excites contraction of the non-striated muscles generally, whether those of the organs or vascular system, and particularly when given with other remedies is a valuable agent.

It is some years ago since I drew the attention of the profession to its efficacy in dilated or lacerated arterial and arterio-capillary lesions, whether dependent on organic or functional disease, and suggested a mode of extracting its therapeutic properties, differing from the process of the pharmacopœia. The article appeared in the *Medical Press*, and elicited valuable commendations from many of my professional friends that confirmed my views, but, more particularly, I have been confirmed in those opinions by the recent writings of Drs. Waring-Curran and Hirschfeld, and other gentlemen on the same subject.

In 1865 I gave my experience of, and experiments with, ergot and digitalis combined, in hæmoptysis from cardiac, and from pulmonary disease, in albuminuria from renal congestion, in menorrhagia, in serous effusions from capillary engorgement, in fine in all the conditions dependent on vascular dilatation and laceration; and I need not say how pleased I was to see in some years afterwards that Dr. Dobell endorsed my suggestions by his treatment of the same complications with the same combinations; he, with his usual good judgment, combined them in a very elegant form, and a more powerful combination than digitalis and ergot in many diseases there may not be, but I still think that a great deficiency in their pharmacopœia preparations exists.

If we just consider its (ergot) structural and chemical composition, we can hardly fail in arriving at the best means of extracting its medicinal powers. It is a cellulose fungoid, containing a heavy oil, a volatile oil and resin, mucilage, extractive matter and some salts. Now we know that each particular preparation as tincture, extract, and infusion will not extract and retain all these ingredients, and I consider it necessary that all the ingredients should be retained in the medicinal preparation until more certain knowledge than we at present possess of their individual actions is known. An infusion will not get at the heavy oil, or resin, and will dissipate the volatile oil, and a tincture will not dissolve out the salts, nor act on the starchy principles, so we see that the pharmacopœia preparations fail in giving us all the elements and properties of the drug. Dr. Waring-Curran saw this, and requested Mr. Long, a very clever pharmaceutist, to devise some preparation that would present us with all the ingredients and be thus a more certain remedy. Mr. Long ingeniously devised the glycerine one; now I am not satisfied with this. Glycerine is certainly a solvent for many substances, and at the same time, an emulsifying medium, but it fails in acting on many of the active principles of plants. Since Mr. Long's preparation was announced, I have carefully experimented with glycerine, and I find it does not dissolve the organic salts, it does not *extract* the oleaginous elements, and will only mix with the amylaceous when mechanically made to do so, therefore it fails in getting at the saline, the oily and starchy ingredients of the ergot; besides it is apt to take up the elements of fermentation, and gradually be converted into Propionic acid. I will not in this paper weary you with my experiments with it.

Now, as I said before, knowing its composition we can strike off its solvents, and combine them in a single preparation. Ether and alcohol for the oils and resin, water for the salts, the mucilage, and extractive matters, unite these and we have in fact the dissolved assimilable drug, leaving behind only the inert cell walls of the cellulose; the difficulty is to get the ether and water impregnated with their several matters to unite, and the *Sirop d'éther* of the Paris codex enables us to do this, or rather M. Regnauld's modification of the *Sirop d'éther.*

Strangely enough in the preparation of the extract of ergot of the British Pharmacopœia, ether is used to extract the oils and resin in order that they may be rejected, in deference I suppose to Bongeau's ideas that they were inert or poisonous, notwithstanding that Dr. Baker showed the contrary, and indeed it is not likely that the oils, particularly the volatile oil and resin, should be inert considering that they are usually the active principles of plants, and in the case of ergot we know that that which has lost its peculiar odour (due to their presence) is valueless.

What I recommend is, first crush the ergot into fine powder, pour the ether and alcohol on it, allow it to rest in stoppered bottle for twelve hours, at a temperature of 60°, then pour off and press well the mass so as perfectly to extrude the absorbed liquid; the volatile principles being now dissolved out, boiling water is to be poured on the residuum and infused for twelve hours at about 150°, thus extracting the mucilage salts, and extractive matters. Regnauld's *Sirop d'éther* comes into requisition now to enable us to mix the etherial tincture and the watery infusion, and this I do according to his recommendation, by strongly agitating the two with crystallized sugar, until a perfectly homogeneous syrup is produced, this makes a very elegant and certain preparation; great care and nicety are required in the manipulation, but it fully repays the trouble by the certainty of its action. It will be found useful in those lesions before mentioned, and in hemorrhagic and congestive conditions attended with excited cardiac action may be combined with digitalis, and in chlorotic conditions with iron, never forgetting that it seems a specific excitor of uterine action, no matter whether the womb be gravid or not, also unsafe to administer in parturition, unless one is ready to deliver within an hour of its administration, for undoubtedly it possesses some poisonous properties, especially apt to affect the fœtus.

Anyone wishing to procure the preparation made in the manner I have mentioned can do so, from Messrs. Boileau and Boyd, chemists, who have communicated with me on the subject, and to whom I have given the process in its more minute details.—*Medical Press and Circular, April* 6, 1870, *p.* 267.

88.—PRURITUS OF PREGNANCY CURED IMMEDIATELY BY THE USE OF TOBACCO.

Mrs. W., a woman of nervous temperament, became pregnant a few months after her marriage. In addition to the usual derangement of the alimentary canal, she soon experienced a severe itching all over her body. The skin was of a perfectly normal appearance; the pruritus, however, caused her great excitement and soon produced nervous spasms. For several weeks every possible external and internal remedy was used in vain. A decoction of walnut-leaves gave her some relief when in the seventh month of pregnancy. Then a violent pyrosis and neuralgia of the dental nerves supervened. In order to alleviate the latter, she was advised by her husband to try the effect of smoking, when the pain as well as the itching and pyrosis disappeared immediately. Mrs. W. smoked one cigar every evening until she was prematurely delivered by a fright, after 8½ months.

Fourteen months afterwards Mrs. W. again became pregnant, and was again affected, in the fourth month of pregnancy, with pruritus followed by pyrosis. She did not immediately resort to smoking, from dislike of this habit, until the evil increased, when the smoking of one cigar again rendered her perfectly comfortable. She was this time also delivered prematurely in the seventh month, without any known cause to account for it.—(*Tribune Médicale*) *American Journal of Obstetrics*, May, 1869, p. 136.

89.—INDUCTION OF PREMATURE LABOUR.

Dr. SKINNER is much in favour of Dr. Tyler Smith's plan for producing premature labour, by means of injecting water into the uterus. In the case of a woman with contracted pelvis, he throws up a quantity of warm water into the uterus, having first passed the long tube of an ordinary stomach-pump an inch and a half within the os uteri. After continuing to throw up water for about ten minutes, the os was found next morning slightly dilating and the head presenting far up. Pains came on pretty rapidly, and when the os became fully dilated, the membranes were ruptured, and a living male child was born eighteen hours after applying the water-douche.—*Medical Press and Circular*, *April* 6, 1870, *p.* 275.

90.—ON UTERINE HEMORRHAGE AFTER LABOUR.

By Dr. ROBERT BARNES, Obstetric Physician and Lecturer at St. Thomas's Hospital; Examiner in Midwifery to the Royal College of Surgeons.

[The following is an abstract of a paper read before the Obstetrical Society of London.]

The author endeavoured to define the conditions upon which arrest of hemorrhage after labour depended, the action of the remedies in common use, and the indications for resort to particular remedies. The remedies almost exclusively depended for their efficacy upon their power of exciting contraction of the uterus: this presupposed nerve force enough to respond to excitation; but when this was exhausted, remedies failed. It became then necessary to seek a new power that would act under the condition of exhausted contractility. This was found in styptics like perchloride of iron, which acted by coagulating the blood in the mouths of the open vessels, and corrugating the inner surface of the uterus. Acting exactly when ordinary means failed, it was a new power to save women from dying of hemorrhage. Examining the action of ergot, compression of the uterus, and cold, he urged that these should not be trusted if they failed to act quickly; for if they so failed it was probably because contractility was gone. If persevered in beyond this point, they did harm. Ergot and cold added to the depression; kneading might bruise the uterus; all were apt to occasion some form of puerperal fever. The perchloride had in several cases been followed by death, when used for injecting nævi; but this case was essentially different from that of injecting the uterus. In his own practice he had observed three orders of cases. In the first all recovered well, the hemorrhage being immediately stopped; in some of these death would almost certainly have ensued but for the remedy. In the second series recovery occurred, phlegmasia dolens supervening; but phlegmasia dolens was not unusual after severe hemorrhage, and some of these cases would have died but for the remedy. In the third, death followed, but the patients were moribund when the remedy was applied; it came too late: here the remedy was transfusion. The practical lesson resulting from a review of these cases was to observe the rule he had laid down, not to persist too long in the use of cold, kneading, and other remedies, but to resort to the perchloride before collapse had set in. Dr. Barnes showed a convenient case constructed by Krohne and Sesemann, containing a set of his dilators, a Higginson's syringe with uterine tube, and a bottle for perchloride of iron.

[Dr. CLEVELAND observed that he has used an 8-oz. india-rubber bottle, which can be readily attached to a flexible male catheter. He considers this preferable to a Higginson's syringe.]

Dr. WYNN WILLIAMS had used it for a long time, although not exactly in the same manner as the author of the paper, but in a way which he might call the ready method. This consisted in taking a sponge, on which some of the tincture of the perchloride had been poured, and passing it into the uterus through the hollow of the hand already introduced, after of course previously emptying the uterus of clots, and then sponging the interior of the uterus with it, leaving it in the uterus if seen fit, with a string attached. He thought this plan less objectionable than injecting a considerable quantity of fluid. The stains on the hands of the operator were readily removed by a solution of oxalic acid, or salts of lemon.

Dr. Braxton Hicks most cordially agreed with the whole paper. He wished to add, however, a few remarks. In the first place, he thought there was a considerable difference in different cases as to the condition of the internal surface of the uterus after the expulsion of the placenta. In some uteri examined after death, the large apertures of the sinuses described by many authors were absent. There were, of course, the arterial openings, and those of their return veins, of considerable size certainly, but not very large. In others, it would be found that the sinuses, in their oblique passage through the uterine walls, occasionally abutted on the line of separation of the placental decidua. When the placenta was removed, then the feeble wall gave way, and severe loss would result, unless the uterus contracted quite firmly. In the former case it did not require that severe uterine contraction, and the perchloride would readily act. In the latter it would probably be found that even the perchloride would fail to arrest this great stream. Enormous gushes he believed to be the result of a pre-accumulation which had been going on unobserved. To one class of cases Dr. Barnes had not alluded —viz., placenta prævia, where the cervical zone was relaxed after delivery. In these, the perchloride applied to the surface was of much value. In severe cases of abortion, also, when the uterus had been emptied, he had used it frequently with complete success, and without any untoward result. He used a somewhat weaker solution than Dr. Barnes.

Dr. Playfair referred to the importance of aiming at the prevention of post-partum hemorrhage, and urged the careful following down of the contracting uterus with the hand. On the subject of the value of the perchloride, he could but add his testimony to that of the previous speakers.

Dr. Tyler Smith, after eulogising the paper of Dr. Barnes, said that he believed that few cases of dangerous flooding would occur if in all cases a full dose of ergot were given immediately after the birth of the child. It would, in his opinion, be a vast improvement in obstetrics if the forceps could be substituted for ergot, as now often given during labour; and if the ergot were administered habitually at the moment of birth, or while the head was passing the vulva. Besides the prevention of hemorrhage, subinvolution of the uterus would become less frequent. This rule of giving ergot had been extensively followed, by his advice, and with the best results, in India, where flooding was still more common than in this country.—*Lancet*, *Dec.* 11, 1869, *p.* 806.

91.—AN AID TO PARTURITION, AND TO THE TREATMENT OF DISPLACEMENT OF THE UTERUS BY A NEW MECHANICAL APPLIANCE.

By Dr. Protheroe Smith, Physician to the Hospital for Women, &c.

What makes the contrast between the easy and rapid childbirth of the savage state, and the painful and lingering process in civilised life?

In answering this inquiry, I shall endeavour to elucidate the chief reason of this obvious difference, and thence to show what gives the advantage to the savage. I shall endeavour to prove that a force, which exists in the one, and is deficient in the other, explains to a great extent the dissimilarity of the two instances. I hope then to propose a remedy for the defect, and to give my experience of its efficacy. The same question applied to uterine ailments is capable of a similar explanation, and its solution will, I venture to say, elucidate an important cause of the frequency of diseases of women in civilised life.

Man being erect, it necessarily follows that the structure of the pelvis and *abdominal* muscles must be such as to retain the viscera in their proper position, and to make the necessary expulsive efforts, which defæcation and parturition require, with impunity.

The spinal column thrown into a series of waves, not only lessens shock from concussion, but by its lumbar curve the plane of the pelvis is rendered oblique, constituting that graceful form, which, when absent, is artificially supplied by a pad or bustle, and which is so designed as to support the abdominal viscera on the pubes, aided by the abdominal muscular walls and spine, and to retain them within the pelvis. But when the plane of the pelvis becomes horizontal by the obliteration of the lumbo-spinal curvature, or, as it is called, the Grecian bend, the abdominal viscera tend to prolapse towards or beyond its outlet, and to displace the pelvic contents.

This lumbar curve being absent at the extremes of life, the infant is found to be straight-backed; whilst the common evidence of old age is the obliteration of the double antero-posterior curves, going on to the bowed back and drooping form of those who are well-stricken in years. But the deficiency of the natural spinal curves is more or less known in early adult life; it may be from disease of the bodies of the vertebræ, with which we have at present nothing to do, but its chief cause may be found to be defective muscular power, which, in its cause and effect, forms the chief subject of the present paper.

Unlike the ancients, who suspended their garments from the shoulders, the usages of modern society impose upon females, more or less from the period of birth, the habit of wearing a cincture round the waist. From this are suspended all the clothes, which, by their weight, keep up considerable pressure on the thoracic, lumbar, spinal, and abdominal muscles; and this persistent pressure often leads to degeneration of the tissue of these muscles. Thus the muscles used in diaphragmatic respiration, and for fixing the chest in forced efforts of expulsion, as well as those of the spine and abdomen, are enfeebled by absorption or degeneration of muscular fibre, and so their functions are impaired. This alteration in the muscular tissue is well known to all who have witnessed the result of tight lacing in the dead house, in the muscular atrophy which marks such cases, and attenuates the abdominal walls. The consequent obliteration of the lumbar curve, and the levelling of the plane of the pelvis, destroy the natural lines of the female figure, and open the door to all those maladies, which result from the above-named deformity of the spinal column, and of the pelvic outlet.

Two great canals are lodged within the pelvis, viz., alimentary and the generative. For the expulsion of the contents of the one, in the act of defæcation, there are necessarily: 1. The involuntary contractile force of the bowels; and 2. The voluntary force supplied by the spino-abdominal muscles.

In this act the direction of the pelvis is altered, so as to facilitate the passage of the fæces by means of an inclined plane, over which they are readily expelled.

In parturition, the expulsion of the child through the pelvic canal is protracted, in like manner, for lack of muscular power; and the process at times seems almost left to the unaided force of the womb. Hence this organ is overtaxed, and sometimes fails in its efforts till helped by instrumental traction.

Of the two uses now claimed for the pelvic band, the first is to supply artificially that force, which may be deteriorated by dress, or suspended by anæsthetics; and, by so doing, to aid the overtaxed uterus by curtailing the period, and so to lessen the risks of ordinary labour; the second, to aid the treatment of uterine maladies.

I will now briefly describe the instrument, showing wherein it differs from, and in what way, I believe, it is superior to any that have hitherto been brought before the profession. The advantages of it, when used as an aid to parturition, are the following: 1. A fixed point is secured for the exercise of mechanical force by means of, as it were, an artificial skeleton, the immobility of which is secured by two pads, one sacral, the other pubic, retained in their respective places by lateral springs, which embrace the pelvis below the cristæ iliorum. 2. Then, a fixed point having been gained, attached to the sacral pad are two vertical levers, and one horizontal, the former (vertical springs) end each in a costal spring, embracing the thorax, and united by a sternal pad, so arranged as not to incommode the chest in respiration; the latter or horizontal is a powerful spring, buckled to a belt closely adjusted to the abdominal walls, and connected above to the costal springs and below to the pelvic band by elastic rings. It is thus constructed, so as to act in the manner of the abdominal muscles. During the parturient pains, this belt is readily tightened at will to assist or supply the place of the voluntary muscular contractions, and is as readily relaxed in the intervals of pain. When required, it may be made to maintain a steady uniform pressure, as is often needed *post partum*. This force, reacting upon the sacral pad, affords to the patient that support in the lumbar region which is so much called-for during labour, and which is usually supplied by the hands of the nurse.

In the catalogue and report of instruments, published by the Obstetrical Society in 1867, there is at page 5, an ingenious contrivance of Dr. Woodward of Worcester, which seems to answer the purpose just referred to, and which he accordingly names an "Obstetrical Back-Supporter." When the power of the abdominal muscles has been impaired by the constraint of dress, or rendered deficient under the influence of anæsthetics, the instrument which I now exhibit, supplies artificially a force which simulates that of the abdominal muscles, when in a normal state. In this way I have found it of the greatest value in cases of anteversion of the gravid uterus, at the period of parturition. Only a few weeks since, I quickly and easily rectified the abnormal position in a patient I have attended with four children. The ease and rapidity of birth offered a great contrast to her former labours, and the patient appeared herself to be better than on any previous occasion. Her subsequent getting up "was satisfactory in every respect," and she has regained her strength in a manner so superior to that which has happened in her other confinements as to elicit voluntary expressions of satisfaction and surprise from herself and friends.

For the mechanical treatment of uterine ailments, this instrument acts in the following way. The pubic and sacral pads fixed by the lateral connecting springs tend by their mutual reaction to alter the plane of the pelvis, if too horizontal, to one more oblique, and therefore more natural. The costal springs and sternal pad attached to the end of the perpendicular springs, help still further to increase the lumbar pressure, to throw the sacrum backwards, and at the same time to fix the whole apparatus. From the pubic pad and attached to it by a moveable rackwork, is a curved steel spring, which bent to the shape of the vagina, is passed into it, whilst it is made to carry at its extremity any form of pessary or support that may be required.

The advantage of an uterine support adjusted by these means, is that its *point d'appui*, being the pelvis itself, in ordinary movements of the body, it is not liable to displacement.

Without attempting here to enter into the pathology of misplacements of the womb, further than by referring to the cause already mentioned, viz., that of a too horizontal position of the pelvis, I would state that in order to rectify this, the prone position of the patient for a longer or shorter time has often been adopted by practitioners, and this mode of treatment was strongly advocated by my late friend and former colleague, Dr. Rigby. To counteract such derangements, I have made many experiments, which have at length resulted in the production of this instrument.

A standpoint is thus obtained, whereby force can be gradually applied to the lumbar region, so as to alter the position of the pelvis from the horizontal to a more oblique plane. The same advantage is thus gained by the pelvic band without the confinement and constraint of the prone position, and of many other ingenious appliances, which nevertheless are much more complicated and irksome to be borne.

The principal feature of the pelvic band is, that it forms an artificial skeleton, and so supplies all the chief *points d'appui* by which the complicated muscular system engaged in the acts of expulsion harmonise and effect their purpose; and it is one with the pelvis itself as to offer a stability and comfort that no appliance depending chiefly on abdominal, and therefore unstable pressure, can possibly afford.—*British Medical Journal, Nov.* 27, 1869, *p.* 580.

92.—OVARIOCENTESIS VAGINALIS, WITH A NEW METHOD OF PERFORMING THE OPERATION.

By Dr. E. Noeggarath, New York.

[The puncture of cystoid tumours of the ovary through the vagina for the purpose of effecting a radical cure, though attended with a fair average of success, has met with little favour, and is not even mentioned in most surgical treatises. They have not unfrequently been punctured, where by their protrusion into the vagina they have obstructed the progress of labour.

Kiwisch was one of the first writers who gave the operation his support. He published some successful cases in 1845.]

The description of the operative procedure which Kiwisch published in his *Klinische Vortraege über spec. Pathol. und Ther. der Krankh. des weibl. Geschlechtes*, B. II., part of which treatise has been translated by J. Clay in 1860, is given in the following words:—"In order to answer the purpose intended by us, the cyst is opened through the wall of the vagina to such an extent that a finger can be easily introduced through the wound. After evacuation has been effected, a strong, long uterine tube with a bulbous extremity is introduced into the cyst, and fastened in front of the genital organs, and left for several weeks, until diminution of the cavity of the cyst takes place, which process is accelerated by the daily injection of warm water." The further procedure in this operation was generally as follows: first of all, Kiwisch made an explorative puncture, in order to be certain that the cyst was unilocular. After it had refilled, the patient, after proper evacuation of the bladder and rectum, was placed in the position for lithotomy. An assistant undertook the compression of the cyst in the lower abdominal region; a second provided for the reception of the fluid and the fixing of the legs. By means of the uterine sound he ascertained the position of the uterus, which was invariably pushed forwards, and by exploration with the finger the condition of the rectum was determined. Between these lay the cyst to be opened, pressing down the vaginal floor more or less deeply. The operator now placed the index-finger of the right hand on that portion of the vaginal wall where fluctuation was most distinct, or where the cyst projected most. In order to make this easier, the assistant made strong pressure upon the cyst from the abdominal region. In opening the cyst he used a long curved trocar, which was pressed with the point drawn back on the fluctuating place, and then plunged into the tumour, in the direction of the axis of the pelvis, till the canula penetrated about half an inch into the cavity of the cyst. The resistance which the tumour offered was often not inconsiderable, because its thickest part generally lay lowermost. When the trocar was withdrawn and the canula left, the discharge of the fluid demonstrated the immediate success of the operation. Without evacuating much, Kiwisch now proceeded to the second stage of the operation—that is, to the widening of the orifice. With this intention he introduced a long metal director, expressly made for the purpose, which corresponded exactly to the curve of the canula and without a handle, through the canula as deep into the cyst as it would go. He then withdrew the canula, and guided a long, narrow, probe-pointed bistoury, furnished with a strong handle, along the director into the cavity. With this the wound was enlarged in the corresponding direction sufficient to allow the forefinger to pass, which was then introduced as deep as possible into the collapsing sac, in order to ascertain the condition of the internal surface and the length of the canal formed by the wound. After withdrawing the finger he introduced a long suitably-curved uterine tube through the wound deep into the cavity, with its other end fastened with a T bandage in front of the genitals.

Immediately after the operation the patients, when laid at rest, generally felt tolerably well; but on the second or third day symptoms of inflammation of the cyst with a general and commonly severe reaction set in. During from ten to twenty days the local irritation was manifested by the discharge of ichorous fluid, and by great pain in the whole surrounding parts. In favourable cases these symptoms gradually gave place to a purulent discharge, which disappeared after a course of from five to seven weeks, and then shrivelling and perfect obliteration of the cavity took place. As long as any secretion was produced in the cavity, and especially at the time of the discharge of the ichorous fluid, care was taken to guard against any reaccumulation of the contents, by the injection of lukewarm water through the uterine tube twice a day. The injections could not be given forcibly, otherwise they occasioned severe pain. Moreover, it was necessary, in some cases, to use copious vaginal injections, because the corroding discharges irritated the vaginal mucous membrane so much that sometimes a very painful croupous inflammation occurred. It is not advisable to remove the uterine tube until considerable decrease of the disease has taken place, because its reintroduction is very difficult and painful. However, it may so happen that the wound below the bulbous extremity of the tube becomes so narrow, that great difficulty is experienced in withdrawing it. During the greatest part of the treatment the patients are continually kept in bed, and placed under a careful dietetic regimen.

Dr. Kiwisch further remarks, that the advantages which this treatment presents are self-evident. As a general rule, by tapping in this way a perfect evacuation of the cyst is more certain to be effected and maintained, and thus a dangerous collection of ichorous fluid prevented, and atrophy of the cavity essentially encouraged. The displacement of the place of puncture is also not so readily produced in vaginal as in abdominal tapping; and the shrivelled ovary, after the completion of the case, is found nearly in its ordinary position, when subsequent symptoms of dislocation and pathological adhesions of this organ are avoided.

Dr. West has tapped per vaginam in ovarian disease three times, and considers that the method is attended by more hazard than may be inferred from the writings of either Kiwisch or Scanzoni.

[Prof. Scanzoni of Wurzburg has performed the operation sixteen times, in the latter of which he has used the instruments devised by Dr. J. Schnetter of New York. Ten of these cases were cured, only one died.]

According to Dr. Schnetter's advice, a curved trocar is introduced through the vagina with the point drawn back, and plunged into the tumour felt through the vagina. The stilet is then withdrawn, and a knife introduced through the canula, which is an inch and a half long in the blade, and fixed upon a handle constructed according to the curve and width of the canula. The blade of the knife projects beyond the canula. The knife and the canula are now withdrawn from the wound at the same time, and the latter is now dilated to such a size by pressure on the knife that a finger can be conveniently introduced. An elastic tube, about as thick as a finger, is then inserted and bound external to the genitals.

The principal and most important merit of Dr. Schnetter, about the performance of this operation, consists not so much in the happy modification of the instruments, as in the fact that he was the first to enlarge the sphere of the operation, by applying it to cases of cysts in both ovaries, and to cysts of a multilocular nature.

[Dr. Noeggerath reports eleven very interesting cases, with minute details of the operation.]

Indications and Contra-indications.—Not all cases of ovarian cysts are in a proper condition to be treated by the operation per vaginam. Kiwisch says of his method, that it is generally applicable to moderately large simple cysts, which do not exceed the size of a large pregnant uterus, and can be reached from the vagina. Smaller cysts are obviously still more suitable to it as soon as they can be recognised. And still further he asserts that the *operation is only* practicable in those cases where the cyst can be distinctly felt *through the* vagina; that it is particularly difficult when the vagina is narrow, and must then be performed with very great care. If Kiwisch did not attempt to attack cysts of very large size, he was probably afraid, not so much of the immediate effects of the operation itself, as of the evil consequences of a protracted suppuration and its drain on the system. With the improved methods of regulating and altering the amount and quality of the secretion of the cysts after the operation, we do not think that the size of the cyst can form a proper contra-indication against this method. Extensive adhesions have been present in some of our cases, and although they have retarded the collapsing of the cyst, and sometimes the free evacuation of the secretion, they are no absolute hindrance in performing the tapping per vaginam. It is probable that they undergo a process of atrophy when their principal source of nutrition has been destroyed in its vitality. Those kind of adhesions which exclude the safe performance of other operations for the radical treatment of ovarian dropsy—namely, those connecting the cysts with the lower part of the pelvis and the vagina—are very favourable for the operation in question. The condition of the cyst-walls must be taken into account when we decide about the choice of a method of operating: if we admit that a cyst with thin walls will collapse more readily, and be more easily altered in its functions, it may, on the other hand, prove a source of danger by the fact that the inflammation at first kindled up in the inner lining membrane is apt to spread over its peritoneal surface, and thus give rise to symptoms of peritoneal inflammation. In a great many cases where the operation has been performed, unmistakeable evidences of an inflammatory process on the peritoneal surface of the cyst have been observed, which when controlled, and restricted to the peritoneum within the vicinity of the cyst, must be looked upon as a very favourable coincidence, inasmuch as the exudation is apt to aid the process of healing. The lymph deposited, if not reabsorbed, will become organised, and form a cicatricial tissue, which, by its firmness, prevents a re-expansion of the cyst-wall. Thus a considerable thickness of the walls, although it renders the operation safer, as regards the life of the patient, will protract the process of healing. The density, may, however, reach such a degree that it renders the performance of the operation in the ordinary manner not only very difficult, but occasionally impossible, as it occurred in the case of Mrs. A——t. However, since I have given up operating with the trocar, I think that no cyst-wall could be thick and hard enough to oppose any attempt at perforating, if we use the knife and dissect the single layers step by step.

As regards the contents of the cyst, those containing consolidated fat, hair, or encephaloid matter must be excluded from the operation, unless their contents be liquefied by some previous process of inflammation and disintegration. Colloid cysts, even if their contents be not thoroughly fluid, can be treated in this manner, as is demonstrated by Dr. Schnetter's first case. In this instance, after the operation a very rapid liquefaction of the colloid matter took place.

Compound, secondary, and tertiary cysts, and cysts in both ovaries, have been excluded by the first operators, but can no longer be considered a contra-indication against the successful performance of this operation, since Dr. Schnetter has first of all applied the operation successfully in cases of compound cysts. It is possible, under these circumstances, either to tap the second cyst after the first one has been evacuated, and through the same puncture, in one session, or to attack the second cyst after the cure of the first has been completed. (Case of Mrs. B——g and Dr. Schnetter's case.) Everything depends on the relative position of the several cysts to each other. If one be developed on the side of the other, each may be tapped separately on successive occasions; if one be located above the other, the lower one might be punctured, the contents evacuated, and the upper one tapped at once. This latter proceeding might, however, involve some danger in case the second puncture should not happen to touch the upper cyst at a point where it starts from or is connected with the lower cyst by adhesions. Should the trocar touch the second cyst at a point where it is only in close apposition to the first cyst, it would twice perforate the peritoneum, and the opening in the lower cyst would be dislodged from the upper one after it had collapsed; decomposed fluid or gases would escape either from the upper or the lower cyst into the abdominal cavity, and give rise to the most dangerous form of peritonitis. The accident just described, namely, the passage of ichor or foul air into the abdomen, is the cause that the operation, when performed after the method of Recamier, and of late by Dr. Sims, must necessarily prove fatal. Both operated in the following manner: A curved trocar, about two feet in length, was passed into the cyst through the abdominal walls, and directed towards Douglas's cul-de-sac; a second trocar was pushed into the cyst through the vagina, so as to meet the former instrument, which is then withdrawn. Thus two openings are established in the sac, the lower one giving issue to the contents into the vagina, the upper one into the abdominal cavity, causing the accident leading to inevitable death of the patient.

It is therefore better, under all circumstances, to puncture only one cyst at a time; to allow the first one to be drained thoroughly and to contract sufficiently; to wait for the upper one to descend into the vagina, and thus to come within reach of the instruments. In case a second operation appears to be inevitable, it would probably be better to establish the opening in the vagina and the cyst in either the right or left side of the pelvis, as near as possible to the iliac bone, in order to retain a sufficient space on the other side for the performance of the second operation. The time for the second operation is, however, not always optional, since it occurs that the process of decomposition of the contents of the first cyst extends to the second by the separating septum, causing septicæmia, when a second operation is demanded in the shortest possible time, to divert the danger of hectic fever. In Dr. Schnetter's first case a second cyst spontaneously evacuated its contents by suppuration into the first one. It is probable that, by the collapse and destruction of the principal cyst, an obliteration of the vessels feeding the smaller cysts takes place, in consequence of which they either disappear by atrophy or cease to grow.

The relative position of the cyst to the uterus and the neighbouring organs is of the greatest importance. The operation can only be performed in those cases where the cyst is distinctly felt through the vagina behind the neck of the uterus. This was considered necessary in all cases where the operation of tapping per vaginam was to be performed. I have, however, succeeded in executing this method in a case (V——t), where the womb was turned backward and the cyst located in front of it. The uterus, in this instance, was placed forward by the sound, and the cyst pressed downward into Douglas's cul-de-sac. Under similar conditions, where it should be found impossible to accomplish this manœuvre, I would propose to tap the cyst through the abdominal wall, and try to bring it in proper position for the performance of the operation before it had been filled up to its full size.

With regard to the constitution of the patient, experience has taught, that women reduced to a very low degree of health and strength, may be safely subjected to this method of operating, because our better means of performing the operation, and the improved method of after-treatment, do no longer exclude any constitution, no matter how much impaired by previous disease.

After-treatment.—The treatment after the operation has to direct its attention to two points: first, to the reaction following the opening of the peritoneum; and second, the accidents arising from the altered secretions and the inflammation of the cyst. With regard to the symptoms of the first order, it may be said that they never require any very active treatment, except where the operation has been performed in highly irritable and exhausted patients. But even under such circumstances the local application of ice and the use of morphia is always sufficient to rapidly subdue reactive fever and threatening peritonitis. Under ordinary conditions, the reaction on the general system is but slight during the first few days, and it is not until the fourth or fifth day that severe symptoms set in. This second stage of reaction comprises different sources of danger, which must be well understood in order to be properly attended to. They may either be owing to inflammation of the cyst and its peritoneal lining, or to absorption of decomposed matter. In the former instance, the ordinary rules for the treatment of inflammation of serous membranes hold good. A certain degree of inflammation of the cyst and its surrounding tissues, especially of its lower aspect, is always observed, and necessary to bring about adhesion between the peritoneal surface of the cyst and that of the vagina. It is further necessary to destroy the vessels contained within its walls. Wherever the operation is performed according to the method usually employed, namely, by keeping a catheter or canula inside the cyst, inflammatory action is more apt to occur, from the fact that that part of the cyst-wall, opposite to the puncture, is occasionally brought in contact with the upper edge of the canula, by which it is unduly irritated—a fact which I have observed in one or two instances, and where I removed pain and other signs of inflammation by altering the position of the instrument. The septic fever must be avoided by procuring the most complete evacuation of the contents of the cyst, and by altering the character of the secretion. Both indications are complied with by the use of cleansing and disinfecting injections. The frequency of these injections as well as the strength of the disinfecting solution, must be proportionate to the amount and character of the discharge.

In summing up the result of operations performed in 48 cases, we arrive at the following conclusions:

Of the 55 operations performed, 34 were successful; the disease returned in 3; result left undecided in 4; death occurred in 14 cases, or $25\frac{5}{11}$ per cent. Among the latter, 5 may be considered as the direct and immediate effect of the operation, viz.: 1 in consequence of hemorrhage, 4 from peritonitis.

Death was caused in 7 cases by septicæmia, and secondary peritonitis.

One patient died from typhoid fever; one from an attack of peritonitis not caused by the operation itself.

With our improved method of operating and after treatment, we expect that the death-rate can be reduced to a minimum; hemorrhage to any considerable extent can be avoided, and the most prolific source of danger, septicæmia, so influenced by topical applications to the secreting surface of the opened cyst, that we are confident the operation will take the place of ovariotomy in all those cases, of either simple or compound cysts, where the tumour can be attacked through the posterior vaginal cul-de-sac, either primarily or after artificial forward dislocation of the uterus.—*American Journal of Obstetrics, May*, 1869, *p.* 1.

93.—ON TAPPING IN OVARIOTOMY.

By T. Spencer Wells, Esq., Surgeon in Ordinary to her Majesty's Household, and Surgeon to the Samaritan Hospital.

[Professional opinion has to some extent been unsettled as to the propriety of ever tapping ovarian cysts. One German author, for instance, has lately gone so far as to say "no surgeon should ever puncture an ovarian cyst. Tapping is a crime." The chief grounds of objection to it have been the temporary nature of the relief, and the liability to produce adhesions.]

In order to weigh the value of these objections to tapping, I have gone over the records of the 300 cases of completed ovariotomy, and have arranged in the following table the cases where tapping had never been practised, and where it had been performed from one to sixteen times.

	Cases.	Recoveries.	Deaths.	Mortality per cent.
Never tapped..................	135	98	37	27·40
Once tapped...................	78	58	20	25·64
Twice tapped..................	36	24	12	33·33
Three times tapped............	19	14	5	26·32
Four "	9	6	3	33·33
Five "	3	2	1	
Six "	5	2	3	
Seven "	2	2	..	
Eight "	4	3	1	
Nine "	3	2	1	
Ten "	2	2	..	
Eleven "	1	...	1	
Fifteen "	1	1	..	
Sixteen "	2	1	1	
	300	215	85	

It may be seen that the general mortality of the 300 cases is 28·33 per cent.—and that 135 patients, or nearly one-half, had never been tapped. In them the mortality is 27·40 per cent., not 1 per cent. less than the general mortality. In other words, the mere fact that a patient has or has not been tapped (so far as can be judged from 300 cases in the hands of the same operator) does not affect the result of the operation by so much as 1 per cent. Indeed the mortality of the patients not tapped, though less by about 5 per cent. than that of the patients who had been tapped twice, is greater than that of the patients who had been tapped once and three times. Thus 78—or rather more than a fourth—had been tapped once, and the mortality was 25·64 per cent. Of nineteen who were tapped three times, the mortality was 26·32 per cent. Of the 36 who were tapped twice, the mortality was exactly the same as that of the group of cases tapped from 4 to 16 times, namely, 33·33 per cent.—or 1 in 3.

It may be taken then as almost certain that the mortality of ovariotomy is but little affected by tapping—that the fact of a patient not having been tapped, or having been tapped very often, is by itself of little or no value in prognosis. I have shown in a former paper that such adhesions as are apt to follow tapping have no appreciable effect upon the mortality after ovariotomy; and I can now add that in some of the patients who had been tapped most frequently there were no adhesions, and there were firm adhesions in some who had never been tapped.

In considering the objection to tapping on the ground of its danger, as compared with the danger of ovariotomy, some writers appear to me to have fallen into great error. They take a certain number of cases of ovarian disease, and say that so many patients died after one tapping, so many after five, six, or ten, and conclude that tapping is a very fatal operation. I have heard it gravely asserted that it is a more fatal operation than ovariotomy, because after ovariotomy, a third or more of the patients recover; while, after tapping, sooner or later, they all die. But the very important distinction is overlooked between an operation which either cures or kills, and one which only fails to save life, or kills only under most exceptional circumstances.

It is seldom that a surgeon is called upon to perform ovariotomy in order to save a patient from imminent death. But this does occasionally happen. Dr. Wiltshire and Dr. Watson have published a case, where a woman who was dying from bleeding into an ovarian cyst, was saved by immediate ovariotomy. I have been sent for twice to operate under similar circumstances, but both patients were dead before I arrived. In both, large veins had burst, and some pounds of blood were found inside ovarian cysts. If, in any of these cases, the death of the patient had followed ovariotomy, it could hardly be said that this operation had killed the patient; it had only failed to save life. So, if a patient be near death, poisoned by an ovarian tumour in a state of gangrene from a twist in the pedicle, or by the fetid contents of a suppurating cyst, ovariotomy, if performed unsuccessfully, can only be said to fail in saving life. It cannot be said to kill. Yet I have operated successfully under such desperate circumstances; and more than once when rupture of a cyst into the peritoneal cavity had been followed by diffuse peritonitis. In any such case, ovariotomy must be compared with trephining, tracheotomy, herniotomy, or the ligature of some large artery in a case of wound or burst aneurism, or primary amputation of a limb in compound fracture. It is not the operation which is the cause of death, but the disease or accident from the effects of which the patient is not saved by the operation.

But such cases as those just alluded to must be very rare exceptions to the large majority in which ovariotomy becomes the subject of consultation. There is generally as much time for discussion as in the parallel case of lithotomy in the male adult. And in both cases, the responsibility of operating with the full knowledge that if the patient be not saved by the operation he or she is killed by it, must be fairly faced. It is true that death would almost always be caused by the stone or the ovarian tumour, but it might be at a distant period, and if death follow the operation in a few days, the operation must be almost always the cause of death.

Tapping stands on a totally different ground. As a rule, when a patient dies after tapping, it is not because tapping hastened her death, but simply has not succeeded in saving her life. Her life may have been prolonged by repeated tappings, but at last she dies worn out by the disease.

In a future paper I hope to bring before the Society the results of tapping in cases where ovariotomy has not been performed. At present I must limit these remarks to the relation which one operation bears to the other, and I think I have already brought forward a sufficient number of facts to warrant the acceptance of the following propositions:—

1. That one or many tappings do not increase considerably the mortality of ovariotomy.

2. That tapping may often be a useful prelude to ovariotomy, either as a means of gaining time for a patient's general health to recover, or of lessening shock by removing the fluid a few hours or days before removing the solid portion of an ovarian cyst; and

3. That when the syphon-trochar, which I brought before the Society in 1860, is carefully used, in such a manner as to prevent the escape of ovarian fluid into the peritoneal cavity, and the entrance of air into the cyst, the danger of tapping is extremely small.—*Medico-Chirurgical Transactions, Vol.* lii., 1870, *p.* 205.

94.—FOUR CASES OF POLYPUS UTERI.

Under the care of Dr. LLOYD ROBERTS, at St. Mary's Hospital, Manchester.

Case 1. *Cellular polypus attached to the posterior lip of the uterus; flooding three years; excision; recovery.*—E. T., aged 43, was admitted on June 1st, 1869. She has been married twenty-three years, and has had nine children born alive and twelve miscarriages. The catamenia commenced at fourteen, and continued up to the period of her last miscarriage, three years ago, when a flooding began, which has continued at intervals ever since.

Present state.—She is blanched, feeble, and anæmic, with a small, weak, and frequent pulse. A specular examination revealed a cellular polypus, about the size of a vetch, concealed within the os uteri, and attached to its posterior lip, which was insensible, and bleeding freely. In fact, flooding had been going on for several days. She complained of lumbar and hypogastric pains, and loss of appetite.

June 5th, 1869. The speculum having been introduced, the polypus was seized by a small vulsellum, drawn forwards, and detached by means of a pair of curved scissors. A small plug of cotton-wool was then applied, and the vagina subsequently washed daily for a few days. No further hemorrhage occurred, and she was discharged cured on June 17th, 1869. Menstruation has since taken place, and her recovery continues perfect.

Case 2. *Fibro-cellular polypus of the uterus, the size of an orange; flooding three or four years; excision; cure.*—R. R., aged 49, married ten years, has had one child, admitted July 20th, 1869. Her menstruation commenced at fourteen and has always been regular. No leucorrhœa. She has had flooding three or four years, at first every fortnight, lately much oftener: to this very little importance was at first attached by the patient. In the intervals a copious, purulent, and fetid discharge takes place. Lately she has suffered much pain in the bottom of her back, in her loins, and down her thighs, with a painful straining sensation when at stool. Dr. Roberts made a digital examination, and encountered a round body of the size of an orange, rather soft in consistence, lying in the vagina, and extending into the neck of the uterus, being, in fact, a polypus with a pedicle as thick as a two-shilling piece. The open orifice of the os uteri readily admitted the point of the finger, which could thus be passed upwards to the insertion of the pedicle, which was posterior, and into the lower segment of the uterus. The lower and depending portion of the growth was studded with superficial ulcerations. There was much emaciation, with sallow and very pale countenance, clean and moist tongue, frequent and feeble pulse, and difficult breathing.

On July 27th she was brought for operation. The vagina having been dilated by means of a Sims' speculum, and the polypus brought into view, it was seized with a vulsellum forceps, and drawn by firm and continuous traction to the external aperture; the pedicle was then divided as closely as possible to its insertion. No bleeding whatever occurred either during or after the operation. The vagina was syringed daily for a week, and she made a good and rapid recovery.

Case 3. *Large fibro-cellular polypus of the uterus; flooding for two years; excision; successful result.*—E. R., aged 48, a tall, muscular woman, from Mottram, in Cheshire, was admitted on August 2nd, 1869. She has been married twenty-seven years, has had five pregnancies—one child living, another still-born, and three miscarriages. Menstruation commenced favourably when she was twelve years old, and was always profuse. She was not subject to leucorrhœa. Two years ago she commenced flooding, which has continued almost uninterruptedly ever since, so that she is seldom entirely free from discharge, which, when not bloody, is either green or colourless. She is often attacked with severe pains, which, she says, resemble labour pains.

Present state.—She has short and hurried breathing, palpitation, and most of the symptoms indicative of anæmia, small, weak, and frequent pulse, œdematous legs, pain in the back, loins, and fore part of the thighs. On a vaginal examination there was found a large smooth polypus, the size of the two closed fists, attached by a large pedicle to the lower segment of the uterus posteriorly, and hanging through the patulous os into the vagina. There was much discharge of blood during the examination.

Operation, August 12th, 1869. Chloroform having been administered by Mr. Runcorn, Dr. Roberts, after dilating the vagina with Sims' dilator, seized the tumour by hooks, and with steady and firm traction dragged the polypus downwards, and divided the pedicle with a pair of curved scissors. No hemorrhage resulted. The vagina was syringed in the usual way for a few days, and she was discharged, cured, on September 1st, 1869. Menstruation has occurred twice normally since she left the hospital.

Case 4. *Large lobulated fibroid polypus of the uterus; weighing* 24½ *ounces; écrasement; extraction by means of midwifery forceps; recovery.*—(This case is reported by Dr. Leonard.)—D. H., aged 35, from Newcastle-under-Lyne, was admitted on August 24th, 1869. She began to menstruate at the age of twelve years, always regularly, the discharge lasting six or seven days. She has had two children born alive, and has never miscarried. She has also been subject to slight leucorrhœa. She has had menorrhagia, and irregular metrorrhagia, for five years, which discharges were supplemented later on by a muco-purulent leucorrhœa of offensive odour. She has had sacral and lumbar pains, and frequently cramp, especially in the right leg, with constant intrapelvic pains. Being unable to evacuate the bladder, a frequent use of the catheter was necessary. Walking was performed with great difficulty, and very much pain, particularly in the right leg. She has had frequent attacks of flooding lately.

Present state.—She is sallow, haggard, and pale, with the small, weak, and frequent pulse of debility. There is dyspepsia and loss of appetite. A vaginal examination was made, and the pelvis was found to be filled with a large tumour, lobulated, smooth, insensible, and of very firm consistence. It was with great difficulty that the finger could be passed upwards, and the os uteri felt; but this being accomplished, a pedicle, evidently about the thickness of an apple, was felt extending through the os into the uterus.

August 26th. The polypus was dragged, by means of hooks and steady and firm traction, as near the external aperture as possible. It was then removed, by passing round it, as high as possible, the écraseur of Dr. Hicks. In the first attempt, the wire broke before it penetrated the structure of the tumour. Another wire was then introduced higher up, and nearer the uterine attachment. This rapidly worked its way through, and firm and continuous efforts were made by hooks and vulsellum to draw the tumour from the pelvis. These proved entirely ineffectual, from its great size and unresisting material; and its removal was at length effected by the application of the midwifery forceps, and the employment of very considerable extractive force. While passing the perineum the latter gave way, the tear reaching as far as the sphincter. The wound, however, afterwards healed by the first intention, by merely bandaging the legs together. She was put to bed, and the vagina syringed regularly for ten days. She made a rapid and safe recovery, without any flooding, and has menstruated since the operation.—*Lancet*, *Nov.* 20, 1869, *p.* 706.

95.—ON AN IMPROVED ELASTIC PESSARY.

By John Clay, Esq., Professor of Midwifery, Queen's College, Birmingham.

When an elastic pessary is introduced into the vagina and remains *in situ* for some time, the tube attached to the pessary for the purpose of inflating it often becomes so annoying to the patient that a prolonged use of the instrument cannot be tolerated.

To remove this difficulty, I have succeeded in devising an instrument which can be adapted to any form of elastic pessary for the purpose of inflating it, and for removing the air when it is desired to withdraw the pessary from the vagina.

The principal feature of the instrument is a new form of valve. Its mechanism consists of a double tube forming a cylinder and piston. The pessary is introduced into the vagina in its flaccid form, and is then inflated by the force-pump, which is connected with the valve by a screw. The piston-rod is then pushed in flush, and the force-pump unscrewed. When the pessary is required to be removed, it is held firmly by two catgut strings of convenient length, at the same time that the piston is drawn forward by the string. The air will then escape, and the pessary collapse, when it may readily be withdrawn from the vagina.

The working out of the suggestion seemed at one time to be a mechanical impossibility; but, owing to the skill and attention of Messrs. Salt and Son, of this town, an instrument has been perfected as simple in its construction as it is efficient in its application.—*Lancet*, *Jan.* 1, 1870, *p.* 7.

96.—NOTES OF A CASE OF RIGID OS TREATED BY HYDROCHLORATE OF APOMORPHIA.

By Dr. Milne. (Read before the Obstetrical Society of Edinburgh.)

In June last I was called to attend Mrs. S., Melville Terrace, in labour with her fourth child. On arrival I found she had been suffering for three or four hours, and the pains were pretty strong. The os was about the size of a sixpence, and rather hard. The head was below the brim. Previous labours natural and easy. Two hours after, on making a second examination, I was rather astonished to find that, despite pains of a second stage character, little, if any, progress had been made. I introduced my finger within the os, and describing its circumference rather firmly, I found it intensely firm and resistant. I then placed the patient under the influence of chloroform, and commenced to dilate cautiously with the finger. Little good, however, was done by these means, for at the end of eight hours the os still remained about the same size. I then procured a little tartarated antimony, giving two grains in two hours. This, though producing vomiting and ample nausea, secured neither the softening nor the expansion of the os. As the pains were continuing rather strongly, I administered 25 minims of liq. morph. hydrochlor., and left for some time. On returning three hours afterwards, I found that matters were still much the same, the morphia neither having moderated the pains nor helped to reduce the induration of the os. Having brought with me a little hydrochlorate of apomorphia, I resolved on giving it a trial, being aware of its power as an emetic. A solution containing gr. $\frac{1}{4}$ was given. In about ten minutes the patient vomited, and the pains were subdued a little, being less frequent and forcible. On examining again, to my delight the os had softened and expanded immensely, a single sweep of the finger serving to complete it. The pains redoubled their force, and, in a few minutes more, delivery was accomplished.

Remarks.—Cases of rigid and unyielding os are familiar to most obstetricians who have seen much practice, and there are few of us but have spent many weary hours over instances of this kind. I would, therefore, not have thought of reporting it, but for the fact that I obtained such efficient aid from a new drug, and that probably we have got a novel uterine relaxant of considerable power. I say probably, because a single case can no more test a remedy—establish a rule—than a few green leaves can make a summer. It is true that the very rigid os relaxed in a twinkling almost after the apomorphia had time to act, as if the one were cause and the other effect; but then the other relaxants may have helped to pave the way, and the growing exhaustion of the patient may also have pioneered. Further trial is therefore requisite before we can laureate it much, and this I intend giving it as opportunity offers. If it should maintain its character as a uterine relaxant—the antipodes of ergot—and effectually throw open the door of the uterus in extreme cases, I need hardly say that we shall have obtained a drug of unspeakable value; for a fundus and body contracting powerfully, and an os refusing to expand, is about one of the most distressing complications in midwifery. It is a house divided against itself, a perilous antagonism, and has been fruitful of such deplorable results as inflammation, rupture of the uterus, convulsions, exhaustion and death. For myself, there are many other complications that I would prefer before it. The medicines that I employed prior to the apomorphia are those commonly used, and in general prove effectual; the chloroform and antimony, with a little fingering, proving a good tripod on which to rest in these cases. Here they were ineffectual. I may state that I have long since abandoned belladonna, from a conviction, that, however infallibly it may dilate the sphincter of the eye, it is next to useless here. I have never bled in such cases, believing that the remedy is worse than the disease,—that is to say, while you may secure in some cases the solution of the rigidity, you do it at a very great ransom, you enfeeble a patient already weak, and the subject of other causes and sources of debility. Incising the os is a line of treatment I have only once had occasion to adopt, viz., in case of a cancer; and although it is supported by great names, and warranted by considerable success, yet we have always the feeling that the incisions may go further than we desiderate, and that the patient may, in consequence, fare all the worse. Of course there will always cast up, now and then, cases beyond the power of medicine, and amenable only to the scissors or knife; but wherever medicaments can accomplish the work they ought to be employed because less beset with danger.

I do not know that we can hope for much benefit from the apomorphia in cases of undeveloped os and cervix, such as in some cases of placenta prævia; at all events it ought to have a trial. Being also a sedative, it may in some instances lay an arrestment on the pains, the presence of which, until the os be dilated, is a source of peril. If it fulfil the twofold function of opening up the os uteri, and laying for a time an embargo on the uterine contractions, it will solve a difficult problem in this complication, and confer inestimable good.

In reference to the mode of administration of this drug, I may remark that it is much more powerful when injected into the cellular tissue. Were the stomach in any case, therefore, rejecting most things, it could be given by means of Wood's syringe.—*Edinburgh Medical Journal, Jan.*, 1870, *p.* 659.

97.—ON POINTS TO BE OBSERVED IN OVARIOTOMY.

By Dr. D. Lloyd Roberts, Physician to St. Mary's Hospital, Manchester.

[Every available precaution should be taken to avoid an unhealthy atmosphere in the room used for ovariotomy. The ward should be light, airy, lofty, free from draughts, and the walls painted to admit of frequent washings.]

The *operating-table* should be opposite and near a window. The patient should be well and completely covered with flannel for warmth, and only the abdomen and face exposed. The bed, thoroughly warmed to receive the patient, should be at hand; and she should be lifted into it with the utmost care, as the slightest concussion is liable to bring on vomiting.

Temperature of the room.—The high temperature advocated by the earlier operators is wholly unnecessary, and even injurious, as it increases the risk of chloroform accidents. A temperature of 64° I have found most favourable.

Anæsthetics.—I have invariably used chloroform. From its tendency to excite vomiting, which is a very formidable complication in all abdominal sections, it is doubly important that the patient should be brought and maintained under its influence by as small a quantity as possible. This is the primary object to be kept in view; and, whatever be the apparatus used, careful and experienced administration is essential. Mr. Spencer Wells informs me that he has used methylene in preference to chloroform for the last two years. Dr. Keith has employed sulphuric ether, and the very little vomiting which resulted, added to the success of his operations, appear to constitute a strong recommendation in favour of that anæsthetic.

Incision.—Considerable difference of opinion existed among the earlier operators upon this point. It may now be regarded as established, that the extent of the incision should be determined, not only by the size, but also by the nature and consistence of the tumour, the small incision being first practised, and enlarged according to the necessity of the case. When the contents of the tumour are fluid, they can be easily drawn off by the canula, the cyst, thus diminished in size, following by the slightest traction, through a comparatively small incision. On the other hand, if the tumour is solid, and does not admit of reduction, it is better to enlarge the incision than violently to drag a solid, unresisting mass through an opening wholly inadequate for the purpose. The extent to which compound cystic tumours may be reduced by the method adopted by Mr. Wells in emptying one cyst through another by the trocar, is surprising. In making the superficial incision, it is well to avoid opening the peritoneum until quite sure there are no bleeding vessels; which, if discovered, should be twisted or tied. The incision should be made down to the peritoneum without a director. This membrane can then be pinched with the forceps, the fold thus produced divided with the knife, and the director inserted. The membrane can then be divided upon it, above and below, till the incision is coextensive with that in the abdominal wall. This first incision may reach to two inches above the pubes.

Adhesions.—Before tapping cyst the hand should be passed through the incision and over the tumour to ascertain if there be any adhesions. If so, they may be separated by the hand, by the handle of the scalpel, or even by dissection. Adhesions to the bladder, liver, intestines, omentum, and abdominal parietes are dangerous in the order enumerated. The separation of adhesions to the liver, intestines, or bladder, is better effected by careful dissection, great care being necessary in order to avoid denuding the viscus of its peritoneal coat or perforating the intestine. Bleeding vessels are best treated by actual cautery or by ligature, cutting the ends close, the latter being the safest practice.

Pedicle.—There are now various methods of treating the pedicle—viz., by clamp, ligature, actual cautery, écraseur, pocketing the pedicle (Storer), and the seroso-plastic method (Maslowsky), each possessing peculiar advantages according to the nature of the case. When the pedicle is sufficiently long, and not very broad, and can be brought externally without undue traction on the uterus, the clamp, as first used by Mr. Hutchinson, and afterwards more extensively by Mr. Spencer Wells, offers the best method of treatment, as all suppuration into the abdomen and pelvis is avoided, and the risk of septicæmia, &c., diminished. The ligature is applicable in all cases, whether the pedicle be long or short. The practice, however, of tying the pedicle, bringing the ends of the ligature externally, and allowing it to slough its way through, is not only tedious but involves the risk of pyæmia, pelvic and peritoneal mischief. To obviate these inconveniences, Dr. Tyler Smith has revived the bold and ingenious practice of ligaturing the pedicle, cutting the ends close, returning it into the abdomen and closing the wound, and this treatment has been most successful in his hands. Those who advocate the use of the cautery do so on the supposition that the ligature, if returned into the abdomen, may prove a source of irritation, and this plan has also proved very successful in the practice of Mr. Brown, Sköldberg, and others. It is most applicable in short, thick pedicles, where there is little adipose tissue and the vessels are of small calibre.

Cleansing the abdominal cavity.—This should be done with sponges, which ought to be of moderate size, warm, soft, and perfectly clean. The viscera should be disturbed as little as possible, but it is very desirable that all clots and fluid matter should be removed.

Bringing of wound together.—This may be done by means of pins, silk, or silver wire; the latter, in my opinion, being the most preferable, as it keeps the parts in better apposition, produces less irritation, and, if necessary, can be kept longer in than pins or silk. The peritoneum should be included in the ligatures, and there should be three sutures to an inch of surface.

Dressing the wound.—The wound should be still further supported with crossings of plaster, over which a layer of cotton wool may be placed. There is no necessity for a bandage as a support, as it produces in many cases a good deal of discomfort, is very apt to become displaced, and prevents a ready examination of the wound.

The *after-treatment* may be conducted on general principles. The patient should have as little food as possible for the first forty-eight hours, so as to obviate the tendency to sickness or vomiting. The food should be of a fluid and bland character, such as toast-water, milk-and-water, &c., in small quantities and at divided intervals. Pain, restlessness, and vomiting are best controlled by opium given by the rectum in moderate doses. If the patient goes on well for three or four days, she may be allowed a little light food, such as chicken-broth, beef-tea, sago pudding, and good coffee, with milk and dry toast; a little champagne or good sherry with water may also be allowed. The bowels should be relieved about the fifth day by enema, which after this may be used every other day. The periodical use of the catheter should be enjoined every four hours the first few days after operation. The ligatures may be removed about the fifth or sixth day. A patient who has undergone this operation should be provided with a day and night nurse; and in hospitals they should have nothing to do with the dressing of other cases.—*Lancet, Feb.* 5, 1870, *p.* 190.

98.—ON THE TREATMENT OF CHRONIC INVERSION OF THE UTERUS.

By Dr. Robert Barnes, Obstetric Physician and Lecturer at St. Thomas's Hospital.

[There is now evidence to warrant the dictum that ablation of the uterus is not justified in cases of chronic inversion of that organ, until reduction by elastic pressure has been steadily tried. Where elastic pressure has failed there is still another resource which stands before amputation; this method was adopted in the following case.]

Sarah C., aged 29, was admitted at St. Thomas's in November, 1868. She has had two children, the last in May, 1868. She had flooding at the time, and the placenta had to be detached from a tumour which was taken to be a polypus. This tumour was believed to be returned into the uterine cavity; and hence a confirmation of the opinion that it was really a polypus was drawn. I am inclined to think that it was the inverted uterus which was re-inverted or restored, and that the uterus became again inverted. Hemorrhage returned at the end of a month, and continued more or less, so as to induce extreme anæmia and emaciation. It was obvious that she could not hold out much longer against the increasing exhaustion. A tumour the size of a hen's egg was felt in the vagina, connected by a neck narrower than the body of the tumour to the os uteri; at one point the sound seemed to penetrate half an inch beyond the edge of the os. The tumour was not sensitive, it was taken to be a polypus, and it was determined to remove it by the wire-écraseur. The wire was applied on the 12th November. At the first gradual tightening, the patient complained of acute pain. It immediately occurred to me that I had made an error in diagnosis, and that the wire had encircled the uterus. I removed the wire, and having passed a sound into the bladder and finger into the rectum, I turned the point of the sound backwards, when I readily felt it by the finger in the rectum just above the root of the tumour. I subsequently felt the point of the sound by a finger in the vagina carried up behind the root of the tumour, thus clearly determining that the uterus was absent from its normal place. The patient was sent back to bed; an opiate was administered, and further proceedings adjourned. No bad symptoms followed. On the 14th November I resorted to elastic pressure. A caoutchouc bag was placed in the vagina and kept distended with water. This was kept up during five days. Twice during the interval I tried to reduce, by taxis, under chloroform. At one time I thought I had made some impression upon the constricted os, but fatigue compelled me to desist. The taxis was performed by passing the left hand within the vagina, grasping the circumference of the tumour and trying to squeeze the root of it through the ring of the os, whilst the tips of the fingers of the right hand pressed down through the abdominal wall, dipped into the funnel formed by the inverted uterus and gave a counter-pressure and support to the hand inside.

This failing, and the patient being too much prostrated to justify further delay, I determined upon making one more effort to reduce the uterus by the aid of a plan which I have advocated in my lectures for the last twenty years, and which has been suggested by Huguier, Simpson, Sims, and others. This consists in incising the os uteri at two or three points of its circumference, so as to relax the constriction formed by the circular fibres of the cervix, before applying the taxis.

This I accordingly did on the 23rd November. I drew down the uterus outside the vulva by means of a sling of tape passed round its body, preferring this to seizing it by hooks or vulsella. The neck being on the stretch, I made three longitudinal incisions into it, one on each side and one behind. The incisions were about a third of an inch deep and two thirds of an inch long. I then passed the uterus back into the vagina, followed it with my hand, and proceeded to re-invert. I was surprised to find how readily the uterus went through the os, but I was not a little uneasy at feeling that the uterine tissue gave way, as if the excisions were extended by laceration. No bad symptom, however, followed, and there was but little hemorrhage. She had an opium suppository and opium by the mouth from time to time, and perfect rest was enjoined.

On the 1st December, that is eighteen days after the operation, she had three attacks of rigors with pain in the abdomen and tenderness on pressure; no vomiting.

On the 5th there was some heat of skin; the temperature was 100°; pulse 110.

On the next day the pulse dropped to 100.

On the 11th the temperature was 99·5°, and the pulse remained at 100. The abominal tenderness subsided.

On the 23rd I made the first examination; the uterus was *in situ;* the os was a transverse fissure; all seemed to be in healthy condition. Some days later I introduced the sound. By this it was ascertained that the cavity of the uterus was somewhat shorter than normal. This I had observed by the finger at the time of reducing it. It was, I believe, the result of the long standing inversion.

This, I believe, is the first and only case in which the operation described has been performed.

Reflecting upon my own experience and that of others, I should now be disposed to modify the plan pursued in the case narrated above. Failing with simple elastic pressure, I should make a shallow incision on either side of the os uteri, omitting the third incision behind; then, instead of resorting immediately to taxis, I should re-apply the elastic pressure. The gradual gentle action thus obtained would be safer from the risk of laceration.

I would also insist upon the expediency of swabbing the interior of the uterus after restoration, with a solution of perchloride of iron. In recent cases especially, this application will be useful in preventing hemorrhage, in promoting contraction, and in obviating the re-occurrence of the inversion.

In conclusion I wish to submit two or three propositions bearing upon the important point of the diagnosis of inversion of the uterus from polypus. The means of distinguishing the two affections are entirely satisfactory; but inversion is so rare, and therefore so little looked for, that these means are apt to be neglected. Dubois and others relate cases in which surgeons of the greatest celebrity would have been saved from the fatal error of tying an inverted uterus for polypus, had they explored by the finger in the rectum and the sound in the bladder.

Many observers bear testimony to the fact that the sensitivenes of the inverted uterus is not to be trusted to as a diagnostic sign. In many cases no pain is complained of when the body of the uterus is handled. But the case is very different when compression is applied to the neck of the tumour. The round ligament, the Fallopian tubes, perhaps the ovaries, are compressed, and agony inducing prostration is the immediate result. This is truly diagnostic; and it may perhaps be turned to account without the dangerous test of the ligature by squeezing the neck betwen the finger and thumb.

Even where the diagnosis of polypus is made clear beyond doubt, it is possible that the ligature may seize a portion of the uterus beyond the stalk of the tumour. Gooch especially warns against this risk, and relates cases in point. Desault, Denman, and others give similar examples.

2. Before ligaturing a presumed polypus, if the sound cannot be passed two inches or more beyond the os uteri, where it embraces the stalk of the tumour, the sound should be passed into the bladder, and its point felt for by a finger in the rectum above the tumour.

3. Never induce anæsthesia for the removal of a polypus. If the ligature be tightened round a polypus it gives no pain; if it be tightened round the uterus the pain produced gives warning and the opportunity of retrieving error. —*Medico-Chirurgical Transactions, Vol.* lii., 1869, *p.* 191.

99.—REMARKS ON PELVIC PERITONITIS AND PELVIC CELLULITIS, WITH ILLUSTRATIVE CASES.

By Dr. LAUCHLAN AITKEN.

[It is comparatively recently that the pathology of pelvic inflammation has been completely elucidated. It has come to be recognised that many of those cases which had been regarded as purely extra-peritoneal are in reality affections of the serous membrane itself. There are, in fact, two separate and distinct diseases, viz., peritoneal, and extra-peritoneal inflammation.]

Margaret H., aged 39, married, and has had four children, was admitted into the Royal Infirmary, Edinburgh, on the 6th March, 1869, on account of hemorrhage after an abortion, which had occurred four weeks previously. For purposes of diagnosis the os and cervix were dilated by sponge tents, and after examination the ergot of rye was given in drachm doses of the liquid extract, thrice daily. The bleeding ceased, and she was about to leave the hospital on 25th March, when she was seized with a rigor after lying in her bed with the adjacent window open. The pulse and temperature rose very considerably. She perspired profusely after the shivering, and became delirious. She also complained of pain above the pubes. The next day, on vaginal examination, there was fulness and tenderness in the retro-uterine cul-de-sac, but nothing more. Ordered opium internally, and poulticing. On the 29th the pain was not quite so severe, and was relieved by her drawing up her knees, and thus removing the tension of the abdominal walls from a slightly tympanitic abdomen. Immediately above the pubes a somewhat hard and very tender swelling was felt, but its limits could not be made out on account of the pain. Vaginal examination proved the existence of a swelling in the posterior cul-de-sac pressing the uterus forward against the pubes, and, by combined internal and external palpitation, it was found to be part of the same swelling felt above the pubes. The pulse was 120 per minute. She was perspiring very much, but complained less of the pain.

On the 5th April the swelling seemed softer, and apparently indented slightly on pressure. An exploring needle was introduced, and as pus escaped through it, a tenotomy knife was at once employed to make an incision in the most prominent part of the swelling. The cut was immediately behind the cervix, was nearly an inch in length, and through it there escaped very freely about a pint and a half of very fœtid pus. On introducing my finger through the opening, I felt what I considered to be the peritoneal recto-vaginal fold below. The swelling above the pubes still to be felt, but neither so large nor so sensitive.

[This patient was dismissed well on May 1, with the wound quite healed and no discharge.]

This was a highly characteristic case of adhesive pelvic peritonitis following abortion, and ending in abscess. The rapid onset of acute pain, the high degree of inflammatory fever, and the great prostration of the patient from the beginning of the attack, seemed to point to more serious mischief than simply inflammation of the pelvic cellular tissue. Still, many of the symptoms we are accustomed to find in other cases of pelvic peritonitis were wanting in this patient. As in all peritoneal affections, we often have from the commencement of the attack distressing nausea and vomiting, in consequence of which the pulse soon becomes small and quick. Dysuria, occasionally amounting to strangury, and sometimes even leading to complete retention, is often most violent, and I have seen one or two cases in which the attacks of spasmodic pain, apparently at the internal orifice of the urethra, have been so acute as to deprive the unfortunate sufferers of all power of self-control, and to lead them to utter shriek after shriek in their agony. Tenesmus, too, is another of the most distressing of the painful symptoms present, and great pain in defæcation is almost unavoidable, from the ordinary situation of the swelling and effusion. It need scarcely be added, that all appetite is usually lost; that frequently great thirst annoys the patient, and that she lies prostrate in bed, afraid even to stir, and unable to bear the lightest pressure on the wall of the abdomen, and that sleep is but seldom obtained without the use of anodynes. If the inflammation progresses, as it sometimes does, and extends to the abdominal serous membrane, the symptoms of general peritonitis rapidly supervene, and the patients usually succumb. If, on the other hand, the inflammation remains limited, the symptoms become those of chronic pelvic peritonitis, or change into those of intra-peritoneal pelvic abscess.

Still, I do not wish to be misunderstood, nor to lead any one to imagine, because, in a typical case like the one reported, little chance of mistake can arise, that therefore we are able in every instance to make an exact diagnosis. It is only too true, unfortunately, that, in the present state of our gynækological knowledge, we cannot point out any single pathognomonic feature to distinguish pelvic peritonitis from the closely allied pelvic cellulitis; for even though the greater gravity of the symptoms in most cases of pelvic peritonitis cannot be denied, yet it would be highly improper to rely on such a fact for our differential diagnosis. I have seen as severe pain and other symptoms of high inflammatory action in cases of pelvic cellulitis as I have in cases in which I had every reason to suppose the serous membrane alone affected; while, on the other hand, I have been frequently convinced of the existence of sero-adhesive pelvic peritonitis, without the patient presenting such symptoms as would lead us to suspect inflammation in any part of the peritoneum. No doubt, the two affections may often be present coincidently; and, in fact, I have little hesitation in saying, that I believe cases of pelvic cellulitis are very frequently accompanied by some slight peritonitis. Here is a case in point:—

Mrs. C., aged 40, from Liverpool, residing in Lauriston Place, came under my care towards the end of March, 1869. Her previous medical history was not very good. She had been married fourteen years, and a year after marriage had a child, but did not make a good recovery, and has never felt very well since. She had been treated by various medical men; had taken a good deal of medicine, especially aperient, and had occasionally improved. She came down to Edinburgh, and was found to have retroflection of the uterus, for which a loop pessary was introduced. She went about wearing this, although it gave her great pain; and it was only at the end of eight days after its introduction that I was again called to see her. Her symptoms were not by any means marked, the pulse not being above 100, but she could not go about on account of pain referred to the sacrum. On vaginal examination, a swelling between the vagina and rectum was discovered, painful to pressure, but not yielding any sense of fluctuation to combined rectal and vaginal palpation. The uterus was high in the pelvis, not immobile, however, at this time. The cervix was pressed close to the pubes. A few days after my first visit, I found her complaining of supra-pubic pain; and, on examining this region, discovered a tender swelling, which projected slightly above the pubes. Although the swelling behind the vagina was more prominent and nearer the anus, I managed carefully to pass a sound, and prove that this tumour was the fundus uteri. On the eighth day after the first examination, combined rectal and vaginal palpation showed the existence of fluid in the swelling, and I opened it freely with an ordinary bistoury through the posterior wall of the vagina. A good deal of pus escaped, and the tumour above the pubes at once disappeared. On passing my finger into the abscess, I found that it reached, in the cavity formed in the cellular tissue, nearly to the anus. The pus continued to flow for about a week, and a month afterwards she left Edinburgh, having made an excellent recovery, and declaring herself to be freer from pain and uneasiness than she had been for years. Her state then, as given in my note-book, was as follows:—"No pain from deep pressure in the supra-pubic or iliac regions. Internally, uterus pretty immobile, and acutely retroflexed, but somewhat laterally towards the left sacro-iliac synchondrosis. Pain on pressing the cervix upwards, and there is still some slight ulceration of the os uteri. She eats and sleeps well, and, though weak, is able to walk about without pain. The incision is quite healed, but there is some fulness remaining in the recto-vaginal space."

The situation of the cellulitis in this patient between the rectum and vagina is by no means the most common, West, in his work on the Diseases of Women, placing only 14 out of 51 cases in this position. The most common seat of cellulitis is said to be within the folds of the broad ligaments. But even setting aside the difficulty of accurately ascertaining the exact site of those inflammatory products without a post-mortem examination, it must be remembered that Nonat, West, and M'Clintock, who give statistics or offer opinions on this subject, do not sufficiently discriminate between the intra and extra peritoneal forms of pelvic inflammation, thus rendering any assertions on the point almost valueless. For similar reasons, it must be equally apparent that we have at the present no reliable information on the subject of the comparative frequency of suppuration in the two distinct forms of inflammation in the serous membrane or cellular tissue of the pelvis. Thomas, indeed, with a boldness worthy of a better cause, roundly asserts that the marked tendency to suppuration in cellulitis is an important point in the differential diagnosis of that affection from peritonitis; but though other authors, as Duncan, maintain that suppuration is the most common termination in cellulitis, yet no one, so far as I know, except Thomas, has ventured to draw any important inference from what is at the best a mere supposition on his part.

There can be no doubt, however, that when pus has formed in the cellular tissue, it much more frequently finds an exit for itself externally than internally. The statistics of M'Clintock—though liable to correction on account of the fact just stated—seem to show that it is through one or other of the iliac regions that the puerperal cellular abscess most commonly discharges itself. But when M'Clintock goes on to express his concurrence with Dr. Bennett in the statement, that non-puerperal pelvic cellular abscesses are most frequently discharged through the rectum or vagina, I cannot help affirming that he offers no adequate proof for his belief. The passage, however, in M'Clintock's essay on the subject is so confused, that I am quite unable to make out whether he is really speaking of cellular abscesses only, or whether he does not include intra-peritoneal collections as well. "I have an opinion," says Duncan, "that abscesses in the cellular tissue (parametric abscesses) open more frequently externally than intra-peritoneal abscesses (perimetric abscesses) do;" and Aran seems to be much more convinced of the truth of the assertion than Duncan is. At least he states very decidedly his opinion that intra-peritoneal abscesses almost never find an exit through the abdominal walls; and on anatomical grounds alone, we may be fully as confident of this as Aran. The fact seems to be, as Duncan has already pointed out, that the intra-peritoneal abscesses perforate the most perforable viscus; and if we reflect for a moment on the most common site of the purulent collection in those cases, it becomes evident that the rectum and sigmoid flexure are the parts of the intestines into which the matter is most likely to find its way. Very seldom, indeed, does the perforation occur through the bladder, and even more rarely through the uterus or vagina.

That suppuration is more common in the puerperal than in any other variety of pelvic inflammation—whether in the serous membrane or cellular tissue—is a fact disputed by no one; and I think it also probable, that not only is suppuration much the most common termination in such cases, but also that the matter forms much more rapidly. In one patient, in whom the peritonitis had been caused by exposure to a cold wind after an abortion, the pus was completely matured, and the abscess ready for opening on the seventh day after the existence of fulness in the retro-uterine cul-de-sac had been made out. There are one or two other events, too, which have been noticed by observers as more frequent in the puerperal form of the disease than in any other. M'Clintock, for example, calls our attention to the very insidious manner in which the attacks sometimes come on; and in reference to this makes the admirable observation, that in all cases of bad recovery from childbed we should carefully examine the iliac regions day by day, as he has thereby frequently been enabled to detect latent inflammation when no other symptom indicated the occurrence of morbid action. In making this remark, he is, of course, speaking of cellulitis, the only variety of pelvic inflammatory tumour he attaches any importance to; but if we add that, in many such suspicious cases, it is absolutely necessary to have recourse to internal examination, the observation is equally valuable with reference to pelvic peritonitis. Bernutz, too, notices another danger to which the puerperal patient is much more liable than the non-puerperal, when pelvic peritonitis has been developed. "The extension of the inflammation by simple contiguity from the pelvic to the abdominal peritoneum," he observes, "is especially liable to occur in cases of puerperal pelvi-peritonitis at about the end of the second week when the patient has not taken sufficient care of herself. This happens much more frequently in hospital than in private practice." The following notes of the post-mortem examination of a patient who died in the Royal Maternity Hospital, tend to show that this observation of Bernutz is unfortunately only too often verified :—

The patient, aged 29, miscarried at the seventh month, and was delivered of a dead child, after a labour lasting nearly forty hours. She died ten days afterwards, her symptoms all along having been very obscure, and the termination sudden. At the autopsy the cause of death was found to be general peritonitis, but the important point, as bearing on our subject, was the fact that the posterior part of the pelvis was hollowed out into a large cavity, containing about a couple of pints of sero-purulent fluid, which had principally gravitated into the lower part of the retro-uterine cul-de-sac. This cavity was formed by the still enlarged uterus, ovaries, and broad ligaments in front and to the sides, by adhesions of the fundus uteri to the intestines above, and by the rectum and peritoneum behind. The adhesions were recent and easily removed, and the rectum and posterior surface of the uterus were covered by recent lymph. The internal surface of the uterus presented the ordinary appearance of a puerperal uterus. There was no endometritis and no inflammation in the mucous membrane of the right or left Fallopian tubes. The posterior surfaces of both broad ligaments were covered by lymph. The right ovary was much enlarged, being two inches in length. On its anterior surface, and close to the Fallopian tube, a small rounded orifice about the size of a fourpenny-piece was found. Its edges were smooth. On the lower border, another, but larger, rounded orifice existed. It was about the size of a shilling, and had ragged and everted edges. These two orifices communicated with each other, and the ovary between was excavated out into an irregular cavity, which, however, contained no pus.

[In the conclusion of his paper Dr. Aitken considers the diagnosis and treatment of these diseases.]

In by far the greater majority of cases of pelvic cellulitis, we find, on internal examination, that the induration or swelling is on one or other side of the uterus, and that it is only very rarely that the whole roof of the pelvis seems blocked up by the hard stony mass so common in cases of pelvic peritonitis. The tumour in most cases of cellulitis is found principally in one or other of the iliac fossæ, and apparently closely connected to the iliac bones, or, if it has not advanced so far, to the pubes; while the tumour, if felt at all through the abdominal walls in peritonitis, is usually more in the mesial line, or, if situated laterally, does not by any means seem so intimately blended with the bones. An important point in the diagnosis of pelvic cellulitis, as well as of pelvic peritonitis, is the immobility or fixation of the uterus—an immobility which, in many cases of peritonitis when it is fixed all round, may be said to be absolute, while in cellulitis it rarely if ever happens that the fixation is so complete. As the immobility arises to a great extent from the presence of adhesions uniting the womb to other organs or viscera, and not alone from the presence of what we may call a tumour in the pelvis, we can easily conceive why it should be more marked in inflammation of the serous than of the cellular tissue.

In cellulitis, the uterus is usually pushed to the opposite side of the pelvis from that occupied by the phlegmon, whereas, in some cases of peritonitis, the body and fundus of the womb are so completely lost or enveloped amidst the exudation that it is only by the [illegible] sound, when such a use is justifiable, that we can determine its exact position in the pelvis. There can be no doubt, too, that flexions of the uterus of one kind or another—ante, retro, or lateral flexions, according to the position of the swelling—which are common in peritonitis, occur much more rarely in cellulitis. When the swelling has risen into the abdomen, we may be partially assisted in our diagnosis, not only by observing the position of the tumour, or by having followed its mode of origin and progress, but also by calling to our assistance such aids as percussion and auscultation. Portions of the intestine so frequently enter into the composition of the intra-peritoneal tumours, that we can often obtain from them a more or less modified tympanitic note, or hear the movements of gas or fluids through the mass. I know of only one form of cellulitis that could be confounded with an intra-peritoneal tumour under those circumstances, and that is the extension of the phlegmon to the abdominal cellular tissue, the *external peritonitis* of some authors. There is one point which every gynækologist can corroborate, namely, the retraction of the thigh in cases in which the cellular tissue round the psoas and iliacus muscles is involved, and the relief of pain which this flexion produces. I have frequently noticed, in cases of pelvic peritonitis, that the flexed position of the thigh either did not ameliorate the pain, or did so only when both knees were raised, by removing the tension of the abdominal muscles.

To go any further to attempt the separation, for instance, of the different varieties of pelvic, serous, and cellular inflammation from one another, or those again from other diseases for which they might be mistaken, would lead me far beyond the scope of my present observations. I have said enough, I hope, to show that, while in a few cases the most experienced practitioner may without shame confess himself at fault, yet, in the majority, the whole of the features of the case, the *tout ensemble* of signs and symptoms, present to our minds so many points of sufficient distinctness as to enable us to form a correct diagnosis.

In the acute stage, of either of the forms of pelvic inflammation we have spoken of, it may be necessary to be so antiphlogistic as to remove blood by leeching. Of course the amount to be taken from your patient is to be regulated by her general strength, and according to the form of inflammation and variety of the disease she is suffering from. A phlegmon will require the removal of blood to a less degree than a circumscribed peritonitis. A puerperal patient, again, will probably be seldom able to bear much additional loss of blood; the sufferer from the gonorrhœal variety is usually too much weakened by the long-continued discharge which generally precedes the outbreak of the secondary affection: and the same will, in all likelihood, be true of those in whom the local peritonitis or cellulitis is only the complication of an organic disease. In the menstrual variety on the other hand, when the flow has been suddenly checked, and in most of the traumatic forms, leeching, even to the withdrawal of a considerable amount of blood, will not only prove useful, but may even be imperatively required. The rules and method of leeching have been dwelt on at so great length by many of the French authors, that the variety of directions given, and the number of precautions they say are necessary, might almost drive an ordinary practitioner to distraction, if he were to attempt to pay any attention to them. For my own part, I have never yet seen a case in which I thought it essential to take the blood from the cervix direct. I have, in every case I employed leeches, attained all that I desired by allowing them to fasten round the anus; and the communication between the hemorrhoidal veins and those of the uterus and its appendages, is so free that we may almost consider this to be direct leeching. My great objection to the introduction of a speculum, of such a size and shape as to be suitable for leeching, into a hot and irritable vagina, is that it must press injuriously in nearly every case against an inflammatory mass, an immobile uterus, or a displaced and tender ovary.

But if the local detraction of blood is required more in pelvic peritonitis than in the simpler form of pelvic inflammation, the use of opiates may be said to be even still more imperatively demanded in the former. The continued and severe pain, the obstinate vomiting, and the early exhaustion of the patient in consequence of the retching and straining, force us to keep our patients as much as possible under the influence of narcotics, and the most powerful of those remedies are usually necessitated. Opium and morphia suppositories of the strength of a fourth of a grain and upwards, repeated at frequent intervals, and the subcutaneous injection of strong solutions of morphia, are generally the best forms for the administration of that valuable narcotic, as the nausea and sickness often prevent us giving anything but ice by the mouth. Other anodynes such as cannabis Indica, conium, hyoscyamus, etc., may be used, and sometimes are required, but I must confess to having little confidence in their pain-destroying properties in such acute affections as inflammation of the pelvic peritoneum, although they may perhaps be found useful in the few cases in which you ascertain that there is a distinct idiosyncrasy on the part of your patient against the use of opium.

Besides these general and local means, we must have recourse at the commencement of all such cases to constant poulticing or stuping, and it is generally advisable to add to the poultice some soothing tincture, liniment, or oil. The French, in cases in which there is much tympanitis, recommend the application of ice-bags over the abdomen; but most English physicians declare their prepossession in favor of the older method of using heat and moisture combined, in every case of peritoneal inflammation. From mercury, in any shape or form, I have never seen any benefit accrue; but to those who are wedded to the notion that its action is necessary for the resolution of a serous inflammation, it has been suggested that the best form in which it could be given, would be that of medicated pessary or suppository. In both ways, a slight action on the gums can very soon be obtained. In the first week or ten days of the acute stage, very little good is to be had by acting on the bowels by purgatives, though occasionally you require, by means of some simple enema, thrown up through a long tube, to remove any hard or impacted fæcal masses, which, by accumulating in the sigmoid flexure or rectum, may be pressing injuriously on the tender swelling in the pelvis, and thus aggravating the sufferer's pain.

The vomiting is another of those distressing symptoms which frequently requires our interference, and, I must confess, very often baffles all the ingenuity and skill of the medical attendant, occasionally proving even so exhausting as to destroy the patient. Small doses of dilute hydrocyanic acid, bismuth in powder or solution, oxalate of cerium, charcoal, cherry laurel, or lime water, small doses of opium, blisters to the epigastrium, the spinal ice-bag, and the constant use of ice may all be tried in rapid succession, and each successive remedy prove as futile as the one preceding. Sometimes we are obliged to abstain from giving food or medicine of any kind by the mouth, and to trust to nutritive enemata solely, though in a case of pelvic peritonitis the necessity which should induce us to do so must be dire indeed, as one of the main objects of our treatment ought to be to keep the lower bowel as quiet as possible.

When the active symptoms have subsided, and the complaint has passed into the chronic stage, the treatment will vary according to whether we have an abscess formed or not; but to enter even superficially into a discussion of either point would lead me too far.—*Edinburgh Medical Journal, April*, 1870, *p.* 888.

100.—THE RECTUM IN ITS RELATIONS TO UTERINE DISEASE.

By Prof. Horatio R. Storer, of Boston, U. S., Surgeon to the Franciscan Hospital for Women.

[The importance of diseases of the rectum in their relation to diseases of the uterus is very generally lost sight of.]

The present treatment of rectal disease, especially its surgical treatment, is capable of being very materially improved.

With reference to this last proposition, I shall endeavour in the present series of papers, to make my statement good.

Rectal Diagnosis in Women.—Let me first, however, say somewhat concerning rectal diagnosis.

Rectal diagnosis subdivides itself at once into a three-fold group: namely,

1. The diagnosis of disease strictly rectal;
2. The diagnosis of rectal disease as originating, aggravating, or otherwise modifying uterine disorder; and
3. The diagnosis of rectal disease as the result of outlying pelvic or pelvi-abdominal lesion.

For every one of these groups, and in every instance, a direct digital examination is absolutely indicated. It should never, under any circumstances, be dispensed with.

1. The diagnosis of disease strictly rectal. For the examination of the rectum, as is well known, a variety of instruments have been employed. These have been, in the main, of two classes,

a. Dilators, two, or three, or many-branched, and dating back to a great antiquity; bronze instruments of the kind indicated having been found in Roman excavations; and,

b. True specula, of metal, or of silvered glass; these also being sometimes several-bladed.

The latter of the above classes is that most frequently employed at present. Of the several forms of instrument, Fergusson's is in the possession of almost every surgeon, and by every one, so far as I know, it is considered indispensable in practice.

I trust I shall not be considered an idol-breaker, or an enemy to our useful coadjutors, the instrument-makers, when I say that, for purposes of diagnosis, I have long since thrown the anal speculum aside, and this, no matter what its material or form. For examination of the rectum in men, the speculum is required; for the examination of the rectum in women, this is not the case, and under some circumstances, just as obtains with the vaginal speculum in reference to uterine disorder, it is worse than useless, as tending to divert attention from more important points than those striking the eye.

Let me explain what I have said respecting the non-necessity of the anal speculum in women as compared with men.

By passing the finger into the vagina, and pressing it backward and downward over the levator ani, the rectum can be everted through its sphincter like the finger of a glove. This can ordinarily be done to a very great degree; it can always be done to a certain extent. Should the sphincter be unusually irritable, and spasmodically contracting with violence when touched from below or thus from above, it can be forciby distended by the thumbs, and temporarily ruptured, as I am in the habit of doing in such cases; the procedure above indicated thus becoming easy. We can in this manner ascertain the presence of chancre or chancroid, the character of polypi, the extent and number of internal hemorrhoids, the position of the inner orifice in fistula, &c., with far greater certainty and alacrity than by the speculum, or can be done in the male, while the mere eversion process, provided rupture of the sphincter is not necessary, is attended by very little pain.

So far as I am aware, this suggestion of rectal eversion for diagnosis, though so simple and effective, is an original one. It may, however, be very familiar to some of my readers, and may have been mentioned by writers. In this matter of method, every old procedure is new to many minds or has been forgotten, and every new suggestion seems but the re-discovery of something already well known. All that I can say about it is, that I have practised this measure for many years, that I have shown it to a great many physicians who have been present at my examinations and operations, and that none of them ever saw or heard of it before. Eversion of the recto-vaginal septum through the vulval orifice by pressure from within the rectum is partially possible, and a modification of it is familiar to those accoucheurs who are accustomed to hasten a fœtal head delayed at the outlet, by a finger within the mother's anus; and to some gynecologists, who have had to remove a tight-fitting foreign body from within the vagina, or a three-winged intra-uterine pessary from within a nullipara. In the latter instances, one great advantage of this procedure has been, by the finger in the rectum, to fix the body to be removed, and to prevent its rotation during attempts at its direct grasp. The same effects have been sought, with the addition of preventing their escape upward, toward, or into the sigmoid flexure, in the case of foreign bodies within the anus, by digital pressure upon the rectum from within the vagina. Mr. Clay, of Manchester, lays much stress upon this procedure, and withal urges caution, lest, by thus pressing downward, the sphincter ani should be ruptured. I shall hereafter show that this is precisely what should be sought rather than avoided in such cases.

These, it will be perceived, are different procedures from the rectal eversion from above, for diagnosis, that I have described, which in practice will be found alike effectual and gratifying, and equally so, in many cases, during operative interference. Regarding rupture of the sphincter ani, where indicated, by forcible distention, I shall speak hereafter, merely premising that, to Van Buren, after Recamier, we are indebted for certain of the indications of this very valuable, and at times indispensable proceeding.

I shall now adduce from many within my experience, a single illustrative instance of the method of diagnosis that has been described.

Case 1.—A young lady, unmarried and of strumous habit, to whom I had been called in Hampden County, some four years since, was subsequently removed to Boston, and placed under my care. She had uterine disease, with reflex ovarian and vesical disturbance. The meatus and vulval orifice were fringed with irritable outgrowths which necessiated excision, and there was withal vaginismus and urethral spasm of such severe character that the finger in the one case, and the catheter in the other, could only be passed during anæsthesia. A prominent symptom was the existence of intestinal and rectal irritation, the bowels being, at times, so inactive, that on several occasions I was compelled to artificially remove large quantities of impacted fæces; and at others there was excessive and very offensive purulent diarrhœa, and this almost irrespective of medication or diet. Digital or specular examination of the rectum was as impossible without anæsthesia as that by the vagina, while, after the full anæsthesia had been induced, such was the spasmodic condition of the sphincter ani, that a satisfactory examination by either of the methods indicated was still impossible. I was able to ascertain the presence of ulceration within the rectum, sufficient to account for many of the patient's symptoms, but of its extent and precise character I was still ignorant. My father saw the patient with me in consultation, with the same result. I now ruptured the sphincter ani and practised vaginal eversion of the rectum, with the effect of disclosing the whole portion of the interior of that canal which was affected by the disease, settling at once the diagnosis, and rendering the requisite local remedies as easy of application as if to the exterior of the body. This patient, I may add, had also ulceration of a limited portion of the ascending colon in the neighbourhood of the cæcum, dating from a dysentery long previous, and localised distinctly enough by a point of severe and chronic pain. From this she never got ease till I applied a strong solution of nitrate of silver through a rectal or rather cōlonic hollow bougie, passed through the sigmoïd flexure, and until its extremity could be felt by external palpation in the right inguinal region, at the seat of pain. Temporarily relieved in this manner, the poor girl finally succumbed to her malady; in this case the uterine and other pelvic disturbances having been the result rather than the cause of the intestinal disease.

[Save for purposes of treatment, Professor Storer has thrown aside every form of anal speculum, and is accustomed to depend upon eversion of the rectum through the anal orifice by pressure within the vagina. Where the sphincter is unusually irritable and unyielding, its rupture by forcible dilatation facilitates the examination.]

Now, and for several years past, I am in the habit of examining the recto-vaginal wall in the descent of my finger from the *fornix vaginæ*, and before withdrawing it wholly, performing the operation of eversion, stating to the patient as I do it that it is a necessary portion of the examination. She is unable to prevent it, the act being usually accomplished before she has time to object, even if she has an inclination to do so, and the idea of thus examining the rectum is less repugnant to her fastidiousness.

Case 3.—While in Washington a few months since I was requested by a physician from one of the southern States to visit his wife. My engagements not permitting this, the lady was summoned to Washington. I found that the case was one of sterility, associated with a condition of partial amenorrhœa. Upon learning this, I remarked, before proceeding to the examination, that a galvanic intra-uterine bougie would probably effect a cure, whereupon the husband stated that I need hardly expect to be able to introduce such an instrument, as the two or three physicians of his city who had previously had charge of the lady had been unable to pass even the smallest sound, and had concurred in pronouncing the case one of congenital uterine atrophy or of organic stricture of the cervix. Upon myself essaying the introduction of the sound, I was unable to effect it, although the uterus was but slightly displaced (backward), and not particularly indurated or enlarged. It was complained by the lady that she had sometimes suffered from hemorrhoids. Upon introducing my finger into the rectum, for I had withdrawn it from the vagina during our conversation, I found its lower margin free and but little sign of disease as far upward as the finger could readily penetrate. I then reinserted my finger into the vagina and performed rectal eversion, whereupon there sprang out from within the anus, a large polypus, nearly the size of a cherry, with a distinct pedicle, attached to a broad base, which had been concealed between the folds of mucous membrane. This polypus was attached so high that it did not entirely emerge during defæcation; it passed upward before my finger during direct digital examination, it would have done so before the extremity of an anal speculum, and it never could have thus been diagnosticated. The lady came to Boston. I removed the polypus, having ruptured the anal sphincter, and, within a very short time after the operation, an ordinary sized sound passed into the cavity of the uterus, and the patient wore an intra-uterine pessary of two and one half inches in length for a few days, with the effect of increasing the catamenial discharge, and greatly benefiting the general health.

The case was thus clearly proved to be one, neither of uterine atrophy, nor of organic disease of the cervical canal, but merely one of spasmodic stricture, depending upon rectal irritation. There are some cases where the diagnosis, though more direct, is not any more easily demonstrable by the ordinary methods; as in the case I now present.

Case 4.—Some six weeks ago, a patient who has long been under my observation for a lateral version, attended with dysmenorrhœa, and resulting from a partial attack of pelvic peritonitis many years since, stated to me that for several days she had suffered from extreme pain during defæcation, and at other times there was a peculiar pricking sensation within the rectum, which had made her fear the presence of malignant disease. A careful digital examination of the rectum failed to disclose the cause of this, although I made quite firm pressure against the circumference of the canal. Upon everting the rectum from within the vagina, I at once discovered the source of the trouble, namely, the opercular bone of some small fish, probably a smelt, which in its passage from above had become imbedded between the adjacent folds of intestine, and to my finger directly impinging upon it, had presented only its flattened surface, overlaid by mucus, and partially concealed by the folds of the membrane. The removal of the foreign body at once relieved the distress from which the patient had suffered.

The following is a similar instance.

Case 5.—Two or three weeks after the occurrence of the preceding case, and by one of those coincidences observed by every physician, a lady called upon me, complaining of similar symptoms. I laughingly said that I hoped it was not occasioned by another fish bone, everted the rectum in the way that I have described, and there lay an operculum of the same size and shape as in the former case. This patient did not recollect having eaten fish for several months. Removal here also gave immediate relief.

In the cases last related, had dependence been placed upon the ordinary methods of diagnosis, the causes of the irritation would probably have remained undiscovered, giving rise, very likely, to ulceration, and perhaps to peri-rectal abscess and fistula, with all the ails attendant thereupon. Not only, however, are we enabled by the measures to which I have now alluded, to give direct and valuable information concerning the existence, extent, and character of fluid collections and of outgrowths within the rectum, and the presence therein of foreign bodies. For certain special indications, as for instance to ascertain the direction and exact nature of fistulæ, to which I have just alluded, whether anal, perineal, or recto-labial, we are enabled to resort to still other methods of diagnosis, with greater ease and certainty than has ever before been possible.—*American Journal of Obstetrics, May and August*, 1868, *pp.* 69, 119.

101.—REDUCTION IN THE SIZE OF A LARGE TUMOUR OF THE BREAST. RELIEF OF PAIN BY THE EXTERNAL APPLICATION OF BROMIDE OF POTASSIUM AND DILUTE ACETIC ACID.

By Dr. HENRY OSBORN, Consulting Physician to the Southampton Dispensary, &c.

Mrs. B., aged 39, mother of five children, two living. Catamenia natural from the time of weaning the last child. In March, 1869, four months after weaning the child, she began to feel severe darting pain in the left breast, and perceived, for the first time, that something was forming in the breast. Instead of consulting her medical attendant, she applied an ointment to the breast without producing any relief. In the month of August last she had a sudden discharge of florid blood, amounting to about a teacupful, from a small orifice near the nipple, when I was consulted. On examining the breast, I found the nipple completely drawn in, but I was informed that it had always been in a similar state, and a nipple-shield had to be used for drawing the breast; but during the time of nursing the last child the milk was permitted to run out without applying the child to the breast.

There was a small cicatrix a little above the nipple having a small orifice, through which an ichorous discharge and the hemorrhage took place.

On grasping the breast, I found a tumour of considerable size, exceedingly hard, tuberculated, and attached to the deep-seated parts. The pain was lancinating, and so severe at times as to disturb her rest at night and to distress her by day. Ordered a lotion of vinegar and water, and prescribed a mixture of bromide and iodide of potassium, which relieved the pain; but as the patient complained of debility, I suspended the mixture and gave quinine. Under the tonic treatment and the suspension of the bromide internally the pain returned, when I determined to try the bromide externally, by adding it to the vinegar lotion, which had produced a little eruption of the skin, and thus rendered the possibility of the bromide being absorbed. Two drachms of bromide of potassium were mixed with six ounces of vinegar, and ordered to be applied twice a day by saturating a piece of flannel with the lotion and covering it with oil silk. On the following day my patient was comparatively free from pain, and in the space of about a fortnight the tumour appeared a little reduced in size, but this was more pronounced after the lapse of about six weeks. The patient being so free from pain, and believing, herself, that the tumour was not so large, began to improve in health and spirits, and to exert herself by the free use of her arm in all domestic duties.

No internal remedy was administered, except an aperient pill occasionally, and during a sudden attack of sciatica, when I ordered two pills of grey powder aloes, and ext. aconite, which removed the sciatica within a week.

Having watched my patient about once a week since last August, I have found a gradual diminution in the size of the tumour, the reduction beginning at the most prominent parts, where the stone or "marble-like" hardness, as the patient termed it, existed. It is necessary to state that no hemorrhage has taken place since I was first consulted, and the ichorous discharge has been arrested some months past. It is also necessary to state that I, at first, formed so serious an opinion of the case that I informed the husband that a consultation with a surgeon was necessary, when he assured me that his wife would never submit to an operation. I therefore had no alternative but to adopt Medicine *v.* Surgery, and trusting that, by giving publicity to this case, even in its present stage, a further trial will be given of the remedy.

During the last two months I have had another opportunity of trying the bromide in a case of tumour of the breast, pronounced to be cancer by two physicians, and the woman having lost her mother from cancer tends to confirm their opinion. In this case I ordered a lotion composed of one ounce of acetic acid (B.P.), two drachms of bromide of potassium, and five ounces of water. This lotion was ordered to be diluted if found to irritate the skin too much; but the patient informed me that the pain, which was so severe, was relieved by using the lotion without its being diluted. I should have stated that it is necessary to use the lotion warm, especially during the winter.

Although only two months have elapsed since the first application of the remedy, I am enabled to state that the tumour is considerably reduced in size, and the patient suffers less inconvenience, &c.

In conclusion, I would suggest that the bromide lotion would be worth a trial in cases of orchitis, acute or chronic, and diluted accordingly.—*Medical Times and Gazette, April* 16, 1870, *p.* 412.

102.—NOTES ON ANOINTING IN INFANTILE DISORDERS.

By Dr. H. Guard Knaggs, F. L. S., Kentish Town.

During the past eleven months I have been testing, with uniformly successful results, the value of a very simple method of treating such infantile complaints as atrophy, bronchitis, convulsions, diarrhœa, febrile disturbances generally, and indeed all disorders of childhood which are accompanied by an unnatural state of the skin.

The treatment simply consists in smearing with salad oil the whole surface of the body, from the crown of the head to the tips of the fingers and toes, the process being repeated every twelve, six, or even four hours, according to the urgency of the case. Of course the use of a long flannel gown or small blanket is obvious, and the fluid should be slightly warmed.

The application of oil possesses the following immense advantages over the ordinary warm bath:—

1. Skin-action is more completely and permanently restored.
2. The danger of reaction is avoided, for there is no sudden change of temperature; and, moreover, the sheet of oil protects the surface from atmospheric influences.
3. It acts as a fuel-food, not only preventing waste of tissue, but actually increasing the bulk of the little patient.
4. It does not depress, but on the contrary, appears to exhilarate.

It will scarcely be credited by many that the formidable affections above mentioned will frequently yield to this treatment, or at any rate show signs of abatement in from twenty minutes to four-and-twenty hours; but such is the case; though sometimes forty-eight or even seventy-two hours will elapse before any decided signs of improvement occur. By way of illustration, here are a few examples out of many, and I shall be happy to satisfy any gentleman as to their genuineness:—

Atrophy.—My cousin, Mr. S. H. Knaggs, was called to see an infant, whom he found apparently *in articulo mortis.* The mother informed him that she had sent for him "for satisfaction only." The child was oiled, and in twenty minutes began to look about it and took its food. In the course of a fortnight it recovered its ordinary health and strength.

Several similar cases have come under my notice. One of them is rather amusing. A brother practitioner himself told me of, and gave me permission to publish, the following conversation which took place between him and a parish patient:—"Whose child is that?" "Why, mine, sir." "But surely not the child that I told you a week or two ago you would never rear?"

"It is though, sir." "Then the medicine seems to have set it to rights." "But it has had none of the medicine." "Then what have you been doing with the child?" "Why, sir, don't you recollect you told me that a friend of yours recommended that sick children should be rubbed all over with salad oil, and that I might try it if I liked, but that you had no faith in it? Well, sir, I did oil it, and the child has been improving ever since."

Bronchitis.—Last January a desperate case came under my care, which in spite of active treatment became rapidly worse. As a last resource I smeared it all over with salad oil, and, to my utter astonishment, there was a marked improvement in the breathing in less than twenty minutes. In a few hours the bronchitis entirely subsided.

Another case—double capillary bronchitis, neglected for several days—came under my relative's notice. He considered it too far gone for medicinal measures, and therefore ordered it to be oiled every four hours. The next day the symptoms had diminished in severity, and on the morning of the third day the child was sitting up in bed taking food, and to all appearance convalescent.

Convulsions.—In these cases the effect of oiling is sometimes truly surprising, the fit ceasing before the completion of the operation, and not subsequently returning. A patient informs me that whenever she observes the symptoms which used to precede convulsions in her boy, she at once oils him, when a calm sleep follows, from which the child wakes up refreshed.

Diarrhœa.—Some time since my cousin had an uncontrollable case of diarrhœa under his care in a child of seventeen months. I advised him to give oil a trial; but he said it was too far gone for anything to be done. I saw the little sufferer myself a day or two afterwards, and ordered it to be oiled every six hours. There was a marked improvement immediately after the first application. By the next day the prostration was gone. Previous to this attack the child was a "puny little thing;" but now (oiling three times a week having been persisted in up to the present time) it is "a splendid boy."

Enlarged liver in a rickety child; with bronchitis supervening.—This case had been under the care of a well-known hospital physician, who gave it up, saying that nothing more could be done for it. I ordered it to be oiled every six hours. After each application a calm sleep followed. In about seventy-two hours the bronchitis began to give way; and a few days afterwards the liver was observed to have diminished in size. The child has not since ailed.

Such is a sample of a few of the cases which have come under my notice. Did I not confine these notes to infantile disorders, a long string of other complaints, which are to be benefited or cured by oiling, might be added. It seems as though the good old Greek and Roman practice will have to come up again. Such is progress!—*Lancet, Jan.* 22, 1870, *p.* 114.

103.—ON IPECACUANHA IN THE VOMITING OF PREGNANCY, AND IN SICKNESS AND DIARRHŒA OF CHILDREN.

By C. C. Fuller, Esq., London.

I have been induced to make the following communication in answer to Dr. Anstie's invitation to those who have studied the action of small doses of ipecacuanha in vomiting and other diseases to make public their experience. I was led by the recommendation of a medical friend to test the value of small doses of ipecacuanha; and I did so, but with the greatest scepticism, and with the fullest expectation of finding these small doses useless. It was only after repeated successes that I was compelled to believe in the efficacy of this treatment in the following classes of cases:—

1. *Vomiting of Pregnancy.*—Having given extended trials of the following remedies in this disease—viz., hydrocyanic acid, nitrate of potash, oxalate of cerium, opium, nitro-muriatic acid, bismuth, alkalies, and quinine; and though *each of these* remedies was frequently useful, I am convinced that they are all *far inferior to* ipecacuanha. Its effects are frequently conspicuous in the most

severe cases; and it is able not only to control that vomiting which occurs on rising in the morning, but also the more severe forms in which the nausea, retching, and vomiting are almost incessant. The following are brief accounts of two of the cases which occurred under my notice:—

Mrs. W., aged 32, mother of four children, had always suffered during the whole period of her previous pregnancies from severe retching and vomiting, repeated many times a day. On the present occasion she was in the fifth week of her pregnancy, and her sufferings from retching and vomiting were as severe as in former times. She was ordered to take a drop of ipecacuanha wine in a teaspoonful of water every hour, and on the second day of this treatment all retching and vomiting had ceased. The medicine was then discontinued, and was only taken in drop doses on the occurrence of nausea, which it immediately removed. One dose of the medicine was usually taken during the remainder of her pregnancy on each day.

Mrs. D. was in most respects similar to the previous patient. She had three children and during the whole period of each pregnancy she was tormented with sickness and retching, repeated many times a day. After using several remedies without success, the drop dose of ipecacuanha wine was ordered and the most marked relief followed after the lapse of eight hours. It was given, as in the former case, every hour; and discontinued and resorted to in precisely the same manner and with the same satisfactory results.

I could easily refer to other cases equally successful, but these will serve as examples of the efficacy of this treatment. A more extended experience has proved that a dose administered every four hours is sufficient to secure the desired result.

2. *Sickness and diarrhœa of children.*—In this troublesome and frequent affection of children, a drop of ipecacuanha wine, administered every hour, or less frequently, according to the severity of the disease, is most successful. Under its influence the sickness almost immediately subsides and the diarrhœa abates, although the latter may continue one or two days longer, and in a few cases, although very much controlled, may require another remedy to remove it. Its use is indicated when the motions are *frequent* and *slimy*, and also when they are of a *grass-green colour;* and it is also highly efficacious in this form of dysentery when unaccompanied by vomiting; but the presence of sickness may be accepted as a special indication of its usefulness, and rarely will it be found to fail where sickness and slimy diarrhœa are present. The notes of numerous cases have been preserved, but it is unnecessary to give a detailed account of them, as they all presented the symptoms above mentioned.

The same treatment will sometimes prevail over other forms of vomiting, as the following case proves:—

Mrs. H., aged 67, had suffered from occasional vomiting for about four years. The attacks would last for from about ten days to a fortnight. She was never a month without one of these attacks. The vomiting frequently followed from fifteen minutes to half an hour after taking food, but sometimes an hour elapsed before its occurrence. These attacks were treated by several medical men, and relief obtained, but they recurred as stated above. No cause of the complaint could be discovered. Recourse was had to drop doses of ipecacuanha wine every four hours, but no apparent relief from the vomiting resulted until four days had elapsed, although the patient asserted she felt better. At the expiration of that period the sickness ceased, and from that time (more than a year since) she has had no return of the sickness, although she is obliged to have recourse to the medicine on the occurrence of feelings which experience has taught her are the precursors of her attacks.

In conclusion, it is right to mention that cases of other forms of vomiting have occurred in my practice, which have entirely resisted this treatment. Contrary to the experience of some, I have obtained at present no success from ipecacuanha in the vomiting of drunkards, and it is useless to expect that ipecacuanha or any other medicine should be a panacea for all forms of vomiting.—*Lancet, Dec.* 4, 1869, *p.* 768.

ADDENDA.

104.—ON CHLORAL HYDRATE.

By the Editor of the Lancet.

This interesting drug has now been sufficiently tested by a large number of eminent practitioners to enable us to form a tolerably clear idea both of its merits and its defects; and as we perceive that (after the usual fashion in matters medical) there is going to be an epidemic rage for the new remedy, it may be well to call the attention of the public to the principal features of its action which can be said to be fairly made out.

In the first place, the term "anæsthetic" should no longer be applied to chloral, for it has entirely failed to make good its claim to this reputation; even the largest doses do but produce a heavy and prolonged sleep, which is, however, essentially different from true anæsthesia. On the other hand, as a producer of sleep, chloral is, in many respects, unrivalled; for though, like every other remedy, it fails in a considerable number of cases, it does succeed in a very large number; in fact, it is inferior in certainty, as a hypnotic, to opium alone. Moreover, it is very greatly superior to opium, and almost every other drug, in the character of its sleep-producing action; there are no attendant symptoms of cerebral oppression; the sleep, though often prolonged, is light and refreshing, and no unpleasant after-symptoms are experienced. It is important to observe, however, that this description only applies to the use of moderate quantities, and that not only unpleasant but highly dangerous symptoms have been produced by doses which we regret to see are very commonly used. Very careful inquiry leads us to assert that it is both unnecessary and dangerous to give larger doses than twenty to thirty grains, repeated once or twice if necessary, for hypnotic purposes. Doubtless it might happen that 100 consecutive patients might take much larger doses with impunity, but the 101st might present the alarming symptoms described by Dr. Reynolds, in a recent number of the *Practitioner*, as produced by a dose of fifty grains, and these symptoms might easily take a fatal turn.

As a remedy for pain, chloral holds a very varying place in the estimation of medical men, some rating it highly, and others thinking it almost worthless. Perhaps the safest estimate of its power over pain is that it only exerts an indirect influence, by inducing a disposition to sleep, in which the pain is forgotten. Certainly it has entirely failed, in the hands of the present writer, to relieve severe pain of a pure neuralgic type. On the other hand, there is a good deal of evidence that it relieves suffering where the parts are very *tense*, and where mere arterial *throbbing* counts for much in the production of the pain; thus it has been very favourably spoken of for its effects in gout. And this fact, if it be correct, corresponds with certain observations which have been made as to its action on the circulation. Both from sphygmographic experiments on healthy persons and on patients, and also from the details of the nearly fatal case reported by Dr. Reynolds, there is reason to think that chloral exerts a contracting influence upon the arterioles, powerful in proportion to the dose; and it may well be that arterial throbbing is checked by this kind of influence.

On the whole, however, there can be little doubt that the great function of chloral is that of hypnotic, and calmer of general nervous irritability. In *delirium tremens* it is excellent; and it is probable that with two such weapons for choice as bromide of potassium and chloral we shall be able almost entirely to dispense with the use of opium, which is so uncertain and dangerous a remedy in that disease. In the state of sleeplessness which threatens the access of puerperal mania, chloral is probably an unequalled remedy. In melancholia its action as a hypnotic appears to be powerful and remarkably sure. In mania, also, it acts well enough as a hypnotic, though there seems some division of opinion as to whether it does permanent good. We may also state, that in the irritable condition of aged persons who find it difficult to sleep for any length of time continuously, the use of a single dose of thirty grains of chloral appears often to answer excellently well. The minor uses of the drug in relieving more trivial conditions of nervous irritation, and in alleviating painful spasmodic symptoms of various kinds, are probably considerable.—*Lancet, March* 19, 1870, *p.* 421.

105.—THERAPEUTIC NOTE ON CHLORAL.

By the late Sir J. Y. Simpson, Bart., M. D., D. C. L.

[Several years ago, when discussing the past history and future advances of materia medica, Sir James Simpson prophesied that amongst the new organic compounds almost daily discovered, some narcotic would be found "as important as that most useful of all drugs—opium—and yet without either its direct constipating effects, or its indirect tendency to excite subsequent nausea."]

Chloral C_2Ch_3OH, an artificial organic chemical compound, was discovered by Baron Liebig in 1832. Both in its fluid form and when solidified by the addition of a little water into hydrate of chloral, it has been known during the last thirty-seven years chiefly as a chemical curiosity. But lately Dr. Liebreich, of Berlin, has suggested hydrate of chloral as an hypnotic and anæsthetic remedy. I am indebted to the courtesy of Dr. Liebreich for sending me an early specimen of this new drug, and latterly I have used it to a considerable extent in practice. My impression is that, in introducing chloral, Dr. Liebreich has proposed a remedy which will yet prove of immense value in the practice of Medicine, Surgery, and Midwifery.

Hitherto I have principally employed it as an hypnotic and anodyne. In sufficient doses I have found it, as a general law, as sure a producer of sleep and soother of pain as opium or any of its preparations. It is usually swifter in the induction of its narcotism, more tranquil in its action, and more prolonged in its effects than opiates are when taken as hypnotics; but above all, it seems, in a great measure, free from some of the minor drawbacks and disagreeable accompaniments produced by a full and large dose of opium. In this respect it appears to me to fulfil successfully the indications which I predicted in the extract above given, of being a narcotic as powerful, and indeed more powerful, than opium, "and yet without either its direct constipating effects, or its indirect tendency to excite subsequent nausea, vomiting, &c." The sleep induced by a full dose of it steals on without any premonitory symptoms. It is usually deeper, and yet more quiet and calm, than that produced by opium; and it does not leave subsequently the thirst, dry throat and tongue, disturbance of stomach and appetite, and languor of mind as well as body, which most persons unaccustomed to the use of opium commonly feel after a deep and narcotic dose of that drug.

Sometimes chloral produces its hypnotic effects when opium, from its long-continued use, has ceased to do so. To a patient who has had daily morphia injected subcutaneously for some years for neuralgia of the side under the hands of different practitioners, my assistant, Dr. Bell, gave at my request a drachm dose of chloral. Latterly a grain of morphia has been injected daily with the effect of relieving the pain, but without producing sleep. She swallowed the dose of chloral early in the afternoon, and was asked to lie down in bed. I saw her in a quarter of an hour afterwards deeply asleep; and the lifting of one eyelid to look at the dilated pupil did not awaken her. She awoke out of the slumber free from her neuralgia.

I am not aware of any special contraindications to the employment of chloral when used for somniferous purposes. Even in head and chest affections, where I should have been chary of having recourse to opium as an hypnotic, I have employed chloral with perfect success. The contraindications to opium offered by a tendency to constipation, &c., do not exist against chloral.

Like all other remedies in the Pharmacopœia, it will, no doubt, occasionally fail to produce its desired effect; but as seldom so, perhaps, as most of them. In a few instances the sleep produced by it has been dreamy and hysterical, particularly when the patientwas not kept in a state of perfect quietude; but these are rare exceptions to the general rule.

In the present remarks I have spoken specially of the somniferous or hypnotic powers of chloral. I have used it for other purposes, but it is not my intention to dwell upon them at present. It will not fulfil all the many and almost endless indications for which opium is used in medicine; but I have seen enough to convince me that it will prove a very valuable anodyne in some cases of neuralgia, hysteralgia, dysmenorrhœa, pleurodynia, &c., and in the pains attendant upon cancer and acute local inflammations. In some cases of irritable bladder and chronic cystitis I have found it give the patient much longer and more perfect rest than large doses of opium. In several instances it has seemed to me, when given in small and repeated doses, to soothe down both acute and chronic cough with remarkable effect; and I have known it to relieve asthma. Lately in a young lady whom I saw, in consultation with Dr. Taylor, suffering under a severe attack of congestive bronchitis with some hæmoptysis, orthopnœa, a small dose (twenty grains) of chloral was given at night. "She speedily fell asleep," wrote Dr. Taylor to me the next day, "and slept soundly until 4 a.m., when she sat forward in bed and coughed, but appeared to be only half awake. When I called in the morning at 10.30 she was still enjoying a most placid slumber." "As I contrast," Dr. Taylor adds, "the distressed and audible breathing of last night with the tranquil sleep and improved state of the patient to-day, I cannot help concluding that chloral has a directly sedative effect on the whole respiratory surfaces."

Occasionally I have exhibited chloral in continuous small doses for one, two, or more weeks in succession, and apparently with most marked benefit, particularly in cases of chorea, threatened or incipient insanity, &c. A patient from Illinois, who, for several years, has always regularly suffered excruciating spasmodic pain in the left iliac region, attended with some discharge, for eight days before menstruation began (she has disease of the fundus uteri and left Fallopian tube), has, during the last two periods, kept at bay this old and formidable suffering by taking chloral night and morning during the threatenings of it. She strongly assures me that formerly she had used very large doses of opium and other anodynes without any such favourable effect. I have found the parturient uterus to go on contracting regularly and strongly when the patient was so deeply asleep under chloral as to be only imperfectly wakened up with the expulsive efforts of labour.

It has been employed in continued fevers to induce sleep and quietude and reduce the pulse. Dr. Liebreich speaks of its utility in rheumatism, convulsive coughs, tetanus, acute mania, and delirium tremens, and as a sedative after surgical operations.

The dose of chloral to an adult for an hypnotic which I have usually employed has varied from 50 to 60 grains; but 25 to 30 grains suffice in some patients. In a case of long-standing sleeplessness, and which had resisted great doses of opium, Indian hemp, &c., 120 grains failed to produce any effect. When used for anodyne and other medicinal purposes, a continuation of smaller doses—as 10 or 20 grains several times a day—is sufficient.

In administering chloral I have given it only by the mouth and by enema; almost always as a draught. It is somewhat acrid and pungent to most palates, and hence requires to be diluted well with water, and to have added to it a large quantity of syrup.—*Medical Times and Gazette, Jan.* 1, 1870, *p.* 4.

106.—ON THE USE OF HYDRATE OF CHLORAL.

By Dr. Henry Maund, Sandown, Isle of Wight.

In the early days of hydrate of chloral I had a specimen sent to me, for trial, by a London chemist, and since then I have used it somewhat extensively. The following is the result of my experience:—

1st. It is a valuable hypnotic, producing quiet sleep in some cases where the preparations of opium are useless or distressing.

2nd. It is an uncertain remedy; but I think one cause of its uncertainty may be explained by the fact that its influence is resisted by those habituated to the use of alcohol. Fifteen grains has proved an efficient dose for a "total abstainer," and I have known twenty grains give fourteen hours' sleep after morphia had failed; while a fifty-grain dose has several times proved quite inert on a "free liver."

3rd. I have failed to derive any benefit from its use in asthma, whooping-cough, and other spasmodic diseases, unless it induces sleep. If it does not cause sleep, it produces no effect, distressing or otherwise; hence its great advantage, in some cases, over opiates.

4th. It sometimes causes frightful dreams. Two patients have refused to continue its use on this account, although in both cases it produced, apparently, quiet sleep,

5th. It should be used with caution. In private practice, not more than twenty grains should be given for a first dose, or much alarm may be caused by the prolonged sleep sometimes produced by a large dose.—*Lancet, March* 19, 1870, *p.* 409.

107.—AN ANTIDOTE TO CHLORAL.

By Dr. Liebreich, Berlin.

M. Liebreich, after having studied and made known the physiological properties of hydrate of chloral, has directed his attention to the obtainment of a remedy which may counteract the baneful effects of the substance. This antidote he asserts to be strychnia. The results of M. Liebreich's novel researches were laid before the French Academy of Sciences a few days ago, by Professor Wurtz, of the Paris Faculty. M. Wurtz stated that the attention of the Berlin experimenter had been drawn to strychnia by the observation of a case of trismus, which, after having persisted eight days was immediately cured on the employment of chloral. This led him to produce, artificially, the phenomena of tetanus in animals by the administration of strychnia, in order to study the effects of chloral on this artificial condition. He then observed that chloral diminished the effects of strychnia, provided it were exhibited very soon after the administration of the alkaloid.

Another important result was obtained when M. Liebreich, pursuing his researches, discovered the effect of strychnine on animals poisoned by large doses of chloral.

He then made out that strychnia, administered after a too heavy dose of chloral, shortens and destroys the effects of this substance, yet without producing the injurious action which it exhibits in ordinary cases. Therefore, M. Liebreich proposes to employ injections of nitrate of strychnia as an antidote in cases where accidents have occurred through an over-dose of chloral or chloroform.

[Dr. Bence Jones communicates to the *Medical Times and Gazette*, the following passage from a note by Professor Dubois-Raymond:]

Liebreich has recently added a very interesting fact to our knowledge of chloral. He takes three rabbits of equal size, and into one (A) he injects two grammes of chloral. Into another (B) he injects 0.0015 grammes of strychnia. Into the third (C) he injects first the same dose of chloral, and, after the chloral has begun to act, the same dose of strychnia. (The injections are made under the skin of the back.) The chloral is injected in four portions, and the strychnia at *once*. Two grammes of chloral for a rabbit of 1·5 kilos.

are equal to 100 grammes for a grown-up man of 75 kilos. (a dose absolutely mortal). The rabbit (A) collapses very soon. Touching the cornea seems to cause contraction of the lids, and (A) dies after perhaps half an hour. The dose of strychnia administered to (B) is also absolutely mortal. After eight minutes the strongest tetanus ensues, and generally after twelve minutes the rabbit dies, and half an hour afterwards it already becomes stiff.

Now, the new fact is this. The rabbit (C) which has received the dose of strychnia after that of chloral very soon revives; never shows a distinct attack of tetanus; one hour and a half after the beginning of the experiment gets upon its legs, and soon after will feed as though nothing had happened.

I have witnessed the experiment up to the stage when A was dead, B dead and stiff with rigor mortis, and C rallying and trying to sit up.

So we have the extraordinary fact of the action of chloral and strychnia interfering with one another, and strychnia proving an antidote in the case of chloral poisoning. The reverse does not happen, because the action of strychnia is too rapid compared to that of chloral. The animal poisoned with strychnia dies of tetanus before the chloral is fairly brought into action.

Liebreich was led to these experiments by the result of a strong dose of chloral administered to a patient with idiopathic tetanus. The jaws, which had not been opened for a week, relaxed, and the patient could take some food. Eventually, however, he died.—*Lancet, March* 12, 1870, *and Medical Times, Dec.* 18, 1869, *pp.* 387, 723.

108.—SYRUP OF HYDRATE OF CHLORAL.

The hydrate of chloral is coming largely into use as a soothing medicine, and any preparation which tends to render it more easily taken will be welcome. Messrs. Ferris & Co., Union Street, Bristol, have succeeded in preparing a tolerably palatable, and easily dosed syrup, which will save much trouble in dispensing. We have administered it in a case of obstinate irritable cough during pregnancy and in another of sleeplessness from general malaise and mental anxiety, and have found it agree perfectly, and produce the desired results in both cases. We may add that the syrup contains ten grains of pure chloral to the drachm, and that the price is eight shillings per pound.—*Medical Times and Gazette, Feb.* 12, 1870, *p.* 189.

109.—ON THE USE OF CHLORAL AS AN ADJUVANT TO CHLOROFORM AND OPIUM.

By Lawson Tait, Esq., Wakefield.

In addition to the well-known hypnotic action of this drug it may be well for those of your readers who have not had the experience to know that it is a valuable adjuvant to chloroform and opium. I have at present a patient whose case presents many points of interest, of which I intend to make further use. She required the hypodermic injection of nearly twenty-four grains of the bimeconate of morphia daily for the relief of pain; and even this enormous quantity never had the effect of really producing sleep, while it made her sick and destroyed her appetite. When the bed linen required changing it was necessary to put her thoroughly under the influence of chloroform, and this was seldom effected by a quantity less than an ounce. From sixty to eighty grains of chloral hydrate now produce a quiet slumber, which lasts from twelve to sixteen hours, and during this time she frequently wakes, free from pain, to partake of nourishment. When any operative measure or change is required, if the chloral is in action the inhalation of a few drops of chloroform produces the most profound anæsthesia. She suffers from occasional diarrhœa, and this is effectually checked by the addition of ten drops of laudanum to the starch enema in which the chloral is administered. This facility for the combination of the action of chloral and chloroform will, I believe, prove invaluable in obstetric and surgical practice. I have used in the past week nearly a pound weight of chloral hydrate, and become more impressed with its value in every fresh case in which I use it.—*Medical Times and Gazette, Feb.* 12, 1870, *p.* 198.

110.—ON THE HYDRATE OF CHLORAL.

Hydrate of chloral is the drug at present exciting most attention. As yet we know nothing very definite in regard to its action. M. Bouchut says it is a sedative to both motor and sensitive nerves. He says that if the chloral is not crystallized and sufficiently purified to disengage, under the influence of potash, chloroform fumes without the liquid becoming coloured, it is impure, and may be dangerous. He says it ought not to be given to adults in doses larger than five grammes (77 grs.), and that to infants, not more than one or two grammes (15 to 30 grs.) ought to be administered. It may be given *per orem* or *per anum*, the latter mode being said to be more rapid in its action. It is dangerous to administer chloral hypodermically in man. Arterial tension is always augmented during the sleep induced by chloral. The urine passed after a chloral slumber is neutral, and does not reduce the copper of Fehling's solution. Twenty-four hours afterwards, however, the urine is more dense, and it reduces the copper of Fehling's solution like a temporary glycosuria. The action of chloral is precisely that of chloroform, but it is produced more slowly, and lasts much longer. In some it produces all the symptoms of drunkenness; in almost all slumber, rarely associated with hyperæsthesia, more commonly with a remarkable degree of anæsthesia. The degree of anæsthesia seems to depend upon the dose employed; two to five grammes (30 to 77 grs.) according to the age, producing such complete anæsthesia, as to permit of the extraction of teeth, or the painless application of the Vienna paste. Chloral is also the most prompt and efficacious remedy in those cases of intense chorea, where the constancy and severity of the spasmodic movements threatens the life of the patient.—*Gazette Hebdom., Nov.*, 1869.

[In our hands, thirty grains have proved a safe and admirable hypnotic; a less dose has never sufficed, and only in one case have any unpleasant symptoms been developed; these were, insensibility, with coldness and rigidity of the extremities—phenomena which occasionally occur in the chloroform narcosis. Pure chloral must be very cautiously administered in doses over thirty grains. It seems to have no influence, save a merely temporary one, over the spasmodic movements of chorea.—Ed. *E. M. J.*]—*Edinburgh Medical Journal, Jan.*, 1870, *p.* 669.]

111.—NOTES OF TWO CASES TREATED BY THE HYDRATE OF CHLORAL.

By Alexander Maxwell Adams, Esq., Surgeon to the 2nd Royal Lanark Militia.

[The first of the following cases (one of puerperal mania) is still under treatment, but the case is complete for the purpose of illustration.]

I attended Mrs. ——, a very slender and delicate-looking woman, on the 25th of November, with her first child. Her delivery was comparatively easy, and the after-progress of the case satisfactory, until the morning of the 29th, when she began to talk somewhat strangely, and then broke out into a state of the most acute and ungovernable mania. I took off the hair, applied ice to the head, succeeded in getting four leeches to fasten on the temples, and fomented the abdomen. I also gave thirty grains of the bromide of potash, and repeated this dose in two hours. The symptoms of slight congestion with which this case was ushered in rapidly yielded, but the mania continued with unabated fury. I now gave forty minims of Battley's sedative solution of opium; and as it produced no effect, I again administered within two hours the same dose, but with a like unsatisfactory result. I then put her under the influence of chloroform, thinking that it would aid the opium, and that sleep would follow. No such result, however, attended this plan of treatment, and I then, in about twenty-five hours after her seizure, and many hours after I had given the opium and chloroform, administered forty grains of the hydrate of chloral. Her pulse at this time was almost gone at the wrist, and her extremities were cold; but, strange to say, her struggles were even more ungovernable than during any period of the attack, and her cries were incessant.

In about five minutes after the administration of the chloral she became quite calm and sensible, asked what had been wrong, &c., complained of great drowsiness, and within ten minutes fell into a profound sleep, which lasted for about seven hours. Her pulse also gradually gained in volume, and diminished in frequency, until it fell to 90 beats. Her sleep was rather heavy for the first two hours, but afterwards it became quite natural, and even light.

During the progress of this case, in consequence of a periodic recurrence of the most severe form of mania which it has ever been my misfortune to witness, I have been obliged to give the chloral on about twelve separate occasions, in doses varying from forty to sixty grains, and always with the same result—namely, complete cessation, within a few minutes, of all cries and struggles, a return of calm consciousness, followed by a natural sleep, lasting from between six to eight hours. The pulse also, in a very marked degree, always improved when under its influence.

I had not required to give this remedy for upwards of a fortnight until last night, when the mania reappeared, but in a modified form. I gave forty grains, after which she slept calmly for seven hours. And to-day I find her very much better than she has ever been.

I had a consultation on this case a few days ago with Dr. Warburton Begbie, who agrees with me in considering that, so far as it has gone, my patient's life has been saved by the chloral.

Case 2.—I was called upon, on the 1st Dec., to visit a man labouring under an unusually severe asthmatic paroxysm. He had been a patient some time ago in the Brompton Hospital; and, in consequence of the severity of his seizures, had occasionally to be put under the influence of chloroform. This, however, only gave him, he tells me, very temporary relief. His agony being excessive, I administered thirty grains of the hydrate of chloral. In a few minutes his breathing became quite easy; and within twenty minutes he fell into a calm sleep, which lasted for eight hours.

[In a later communication, Mr. Adams says that the first mentioned case is progressing most satisfactorily, his patient being able to take daily out-door exercise, and to attend to light household duties. Acute attacks of mania recurred, but were almost instantly quelled by one or two doses of chloral. He then goes on to observe:]

I have used upwards of fourteen ounces of chloral, in my practice, during the past four months, and, after mature deliberation, have arrived at the following conclusions regarding its therapeutic action and value as a remedial agent:—That it is quite safe if given with ordinary caution and judgment. My experience would suggest that from twenty-five to thirty grains is a sufficient dose to begin with in ordinary cases for hypnotic purposes; that forty grains may be given in urgent cases at the very outset, but that larger doses ought not to be used until the smaller ones have been fairly tried, and have failed. In such cases I am of opinion that the patient who resists a drachm dose may be said, for all safe and practical purposes, to be insusceptible to its action. That, as a very general rule, it is a pure and uncomplicated hypnotic and calmative, and, therefore, having no other contradictory effects, is not liable, like opium, to aggravate and excite where it was meant to soothe. That it does not occasion any of the disagreeable after-effects peculiar to opium, and that its continued use would not appear to exercise any injurious effects upon the system. That in all disturbed and diseased conditions of the mind and nervous centres, attended with mania, delirium, excitement, sleeplessness, convulsions, &c., chloral stands unrivalled as a certain, swift, safe, and powerful hypnotic and calmative. That in such cases small doses often produce rapid and decided effects. That it is rather uncertain when given as a hypnotic in aggravated neuralgia, and other forms of severe and persistent pain, and that even very large doses are frequently resisted under the above-mentioned circumstances. That it is, upon the whole, a valuable, although uncertain, addition to our anodyne remedies, generally acting as such in consequence of the sleep thereby induced outlasting the pain, and rendering the patient insensible to it. That in many cases, however, it acts directly as an anodyne, independent of its sleep-producing properties. That, when given in repeated small doses, it proves a valuable sedative in a great variety of cases, such as whooping cough, spasmodic croup, asthma, irritating and exhaustive coughs, chorea, &c.

I now beg to call special attention to the two following important points connected with the therapeutic action of chloral, which have been repeatedly forced upon my notice:—1st. That chloral will almost instantly, as already indicated, induce sleep where the brain is functionally or organically disturbed, but acts with great uncertainty upon a sound brain where pain is the exciting cause of sleeplessness. 2nd. That in head affections where there is a torpidity of the bowels and retention of urine, chloral does not, like opium, encourage this state of matters, but would seem, owing to some reflex action, whilst effectually overpowering undue nervous disturbance, to stimulate or assist the bladder and bowels to a more healthy action. In the case of puerperal mania already mentioned, this fact was so patent that I came to know, to a positive certainty, that, no matter how long the urine and alvine evacuations might be retained, she was certain to void the former freely, and frequently the latter, almost immediately after coming under its influence. This was a most fortunate circumstance, as the use of the catheter would, in such a case, have been a very difficult operation. The above fact has come under my observation quite as pointedly in other cases.—*Lancet, Jan.* 22, *and April* 16, 1870, *pp.* 112, 567.

112.—CASES TREATED BY HYDRATE OF CHLORAL.

By Dr. J. Frederick Plomley, Maidstone.

During the past few weeks I have administered the chloral hydrate on several occasions, and with marked success. Given as a hypnotic, I have found it a much surer producer of sleep than opium or any of its preparations. Another thing greatly in its favour is that (so far as my experience has gone) it is without the unpleasant after-effects of opium—*e. g.*, constipation, loss of appetite, &c. Two of the patients to whom this salt was administered complained of severe headache when first awaking in the morning; but I attributed this, in the one case, to the large quanity of chlorodyne which had been taken a few hours previously for the purpose of allaying pain and inducing sleep, and, in the other, to a cause quite apart from any effect the medicine might have had. In one other case a feeling of intoxication was complained of when first awaking, but this soon past off.

The first patient to whom I gave the chloral was a gentleman who has been for many years a great sufferer from rheumatic gout, and who has been in the habit of taking almost every night a large dose of opium in one form or another for the purpose of easing his suffering and procuring sleep. As a consequence of this no small amount of gastric disturbance has resulted. He now takes forty-five grains of the chloral hydrate in the place of the opium, and, within ten minutes after doing so, he falls into a sound sleep, which lasts from ten to twelve hours, and awakes in the morning refreshed and with an entire absence of all the unpleasant symptoms of gastric derangement from which he has so long suffered.

In another case, that of a young girl who for some years past has been a great sufferer from bronchitic asthma, the paroxysms of which, occurring every night, have been very severe, and quite prevented sleep, a half-drachm dose of the chloral hydrate, taken a short time before the threatened attack, by inducing sleep, prevents the recurrence of the paroxysm. This patient had previously taken all the remedies usually prescribed for mitigating the severity of asthma, but with very unsatisfactory results. Since she has been taking the chloral hydrate, the attacks, which before were both frequent and severe, have become much less so, and the breathing, which is permanently embarrassed, is certainly much relieved. The cough continues as severe as ever, but the patient expresses herself as "feeling quite a different person" since she has been taking this preparation.

I have little doubt that the chloral hydrate is much to be preferred, both as a hypnotic and anodyne, to opium or any other drug with which I am acquainted; and I firmly believe that, as it becomes more generally appreciated by the profession and the public at large, it will be found one of the most valuable remedies of its class which we possess.—*Lancet, Feb.* 26, 1870, *p.* 300.

113.—CLINICAL OBSERVATIONS ON HYDRATE OF CHLORAL AS A HYPNOTIC IN TYPHUS.

By Dr. James B. Russell, B. A., Physician to the City of Glasgow Fever Hospital.

[In the treatment of the cerebral complications of febrile disease opiates are capricious in their effects, and some sedative safer in its action is particularly desirable.]

In three of my cases, after a 40-grain dose, the toxic effect upon the heart was manifest. In one case only, the 4th, irregularity was developed by so small a dose as twenty grains, but lowered frequency was not uncommon. The large dose was given also twice to a bulky, robust man, but did not affect the heart, so far at least as to cause irregularity. The pulse seemed, but with exceptions, at first and that speedily to improve in quality, but in an hour it became soft and small, sometimes lowered in frequency, and finally the action of the heart became irregular. Although it is difficult to eliminate from the sedative effects of mere repose on the respiratory and circulatory organs of a delirious person, those which are due to the drug which induces the repose, there can be little question that the chloral acted directly and specially on the heart in these instances. In many of the cases also, from the aspect of the countenance, flushed and full, and from the improved colour of the rash, brightening when petechial—the impression of stimulated action which we have said the pulse at the very first, and for a short time, conveys, receives further confirmation. The breathing also is quickened and short, but not laboured. These phenomena, are, however, of the most transient description, and soon give place to those with which we are familiar in natural sleep. The state of the pupil is the same—contracted to the utmost, as in the "pin-hole pupil" of Graves; but, differing from the contracted pupil of narcosis, it expands in the chloral sleep immediately the patient is awaked. The power of voluntary motion seemed never to be in abeyance, but always at command as in natural sleep; and no change in the susceptibility of sensation was present. The sedative effect on the brain and nervous system was sometimes visible in a few minutes, but seldom became developed into true sleep and unconsciousness until from ten to twenty minutes. The transition from waking to sleeping was noted to be often very sudden. If disturbed by any external or internal irritation, as by counting the pulse, for instance, the patient often looked up, with natural or dilated pupil, then turned on one side, seemed to sleep *at once*, and on lifting the eyelid, no movement was caused, and the pupil was found to be almost abolished. According to Richardson, thorough narcosis from chloral is accompanied, in the rabbit at least, by dilated pupil. In Case 1 it will be observed that the pupil remained for a perceptible period contracted, as in opiate narcosis, after the patient had been roused by pinching. Dilatation was never observed from the doses employed in my cases.

Therapeutic action of Chloral.—The therapeutic action desired was sedative and hypnotic, and as such my table of cases shows that it was successful in almost every form of cerebral excitement incident to febrile disease, with remarkable uniformity and rapidity.

Chloral seems to have a more immediate and permanent curative action on such cases of acute delirium, at the acme of typhus, than in the *delirium tremens* of the second and third weeks, when the blood is loaded with the products of the fever and there are general tremors and subsultus.

Case 17 is a good example, where two hours' unbroken sleep, followed by interrupted sleep during the entire day, was produced by ten grains in a boy of fourteen. In both instances the patient became sensible and continued so. This permanently curative action was frequent, as the table shows, and more common in the active than in the adynamic form of delirium. Although this adynamic delirium, or the *delirium tremens* of typhus, as I call it, was less promptly amenable to chloral, as it is to all sedatives, Cases 6, 13, and 18 show excellent results. Indeed, there is no other sedative but chloral which I should have ventured to administer, still less to repeat, in the last two. Seeing that the delirium depends in such cases on the presence of impurities in the blood, the elimination of which is a process requiring time, all that we can expect, from a sedative which does not act by hastening elimination, is to soothe from time to time, and to check vital exhaustion until the process is completed by the natural channels. In this aspect, the chloral appears in no case to better advantage. We shall quote Case 18 as an illustration of its beneficial action in one of the worst cases of such adynamic delirium I have ever seen; it even controlled the subsultus for a time.

In Case 13, there was bronchitis and congestion of both lungs—a state of matters which forbids the use of opium—but chloral was given from time to time, producing sleep, without promoting pulmonary stasis. In Case 15, the restlessness of tubercular meningitis supervening on typhus, in an infant aged 18 months, was temporarily calmed by a dose of 2 grains. The general statistics of results in all cases are as follows:—Chloral was administered 32 times in the treatment of 21 cases. Of these 32 doses, 24 were followed by sound and well-marked sleep, lasting without interruption from 1 to 5 hours, and nearly always prolonged by a succeeding period of broken sleep and general tranquillity, 3 doses had a decidedly, 4, a partially soothing effect, and 1 proved inert; but this last dose was immediately vomited and ought not therefore to be counted. Looking to the 21 individual cases, we find that *not one proved insensible to the chloral when repeated.* I never met with an equal number of consecutive cases of delirium, &c., in which any other sedative showed such uniformity of action, or even approximated to it.

Comparative effects of chloral and other hypnotics.—In the treatment of fever one has necessarily an unusual opportunity of studying the effects of hypnotics and sedatives. Very few cases pass through the physician's hands without at some period demanding the use of some means of producing sleep artificially; and the question which to employ is neither unimportant nor easy of solution. I have a very decided opinion as to the danger attending the use of opiates in fever, no matter how guarded with eliminants, as antimony, grey powder, &c. Nothing astonishes me more, as being opposed to my whole experience of their disastrous results, than the free and unguarded way in which preparations of opium, either alone or combined, are recommended even in treatises on fever, and employed by some practitioners. From the want of a better agent, I have hitherto, after Graves, used Battley with tartar-emetic (5 drops to $\frac{1}{12}$ grain), but I never order such a draught without apprehension, and have repeatedly seen patients put into a dangerous state of narcosis even by *one* such minute dose, a state always requiring active and prompt measures to save the life, and not unfrequently ending in fatal coma, or pulmonary engorgement or congestion. As is well-known, opium always cripples the eliminating functions, especially of the kidneys; and as antagonistic to this action, I always combine with it some diuretic. Even in health you cannot develop the narcotic action of opium without this effect on the excretions. The general action on the nervous and muscular tissues is also paralyzing. The bronchial muscles and epithelium, and the external muscles of respiration, share in the narcotic paralysis. Hence the invariable tendency in opium poisoning to stasis of the blood in the pulmonary vessels, and of the bronchial in the bronchi. Suppose now a case of typhus in the second week, in a state of sleepless delirium from the circulation of poisoned blood through the brain. The cerebro-spinal nervous system manifests the results of its impaired nutrition by violent excitement, or low muttering insomnia; the muscles also, voluntary and involuntary, suffer changes of structure, which can be seen under the microscope; the external muscles of respiration are partially paralyzed, and stasis, set agoing in the lungs by the altered relation of the impure blood to the capillaries, is promoted by the imperfect expansion of the chest wall. The external and internal pathological conditions act and react on each other. When, therefore, we give an opiate to a typhus patient we combine two similar pathological tendencies, and may precipitate into narcosis functions which were previously on the brink, and by cautious management might have been preserved in some measure of vital activity. It is impossible to say what dose will *not* have this effect. As I have said, 5 drops of Battley and $\frac{1}{12}$ gr. of antim. tart. will do it. In rare cases I have seen even the slight lowering of vital action, which accompanies natural sleep (in this case, however, sleep coming without artificial aid to a blood-poisoned fever patient), develop in a case such as I have described, congestion of the lungs, general lividity, and partial coma. But, as a rule, in natural sleep there are no such dangers, and it is the almost perfect analogy between natural sleep and the sleep induced by chloral, in properly adjusted doses, which commends that drug to my mind as the best hypnotic in febrile diseases. I am well aware that the clinical experiments here recorded are but limited, and that my conclusions must be subjected to prolonged trial and observation before they can be thoroughly established. Still I see in the chloral sleep something different from opium sleep, and both positive and negative properties in the former drug, which mark it as safer than the latter. 1. The action of the pupil to which I have already alluded illustrates excellently the close approximation to a natural sleep which chloral bestows, and the difference between it and opium in physiological effect. In all forms of sleep the pupil is contracted to the utmost. But, in natural sleep, the moment the sleeper is roused, and the eyes are opened, the pupil expands; while in an opium sleep the pupil remains contracted, it may be only for a few seconds, or for minutes, or hours. This illustrates in little the general condition of the nervous and muscular system in natural and chloral sleep, and other narcotic forms of sleep. As we have seen, the chloral sleeper may be roused at any time. He is at once in the full command of his functions, he may take food, pass urine, cough with full strength, expectorate, &c.; and whenever the temporary excitation ceases, he may drop over again into unconsciousness. Indeed, as a rule, the chloral sleep consists of a continuous initiatory stage, followed by a period which may extend over six, eight, or more hours of sleep, interrupted by intervals in which food, &c., may be given without the necessity of waking the patient, or any risk of re-establishing the excitement. This was specially noted in some of our cases, as in Case 7, "8 p.m. Sleeping; had drinks at intervals, falling asleep at once afterwards." Not so with the patient after an opiate which will produce an equally sedative effect. His pupils are small; if his lungs are gorged with mucus, he has neither the intelligence to see the necessity, nor the muscular energy at command to cough and expectorate. 2. The excretions are not affected by chloral. They are by opium. The bowels are made costive, the urine scanty, the mouth parched, and the skin dry. 3. The administration of an opiate to a child is in any circumstances a procedure which the practitioner adopts with misgivings. Chloral may be given with perfect safety, and with perfect success. 4. Opiates, even as combined by Graves, with tartar emetic, are uncertain, very frequently quite futile. As already stated, I have met with no patient who resisted the action of chloral.

I have contrasted chloral with opium at much length, because opium is really the only hypnotic of sufficient value to be contrasted with it. Having, in the course of practice, gradually acquired the opinions regarding its dangers in fever, to which I have already given strong expression, it was natural that

I should employ any drug or method which promised good results as a sedative. Space forbids any lengthened reference to this partly experimental practice. For some time, the bromide of potassium and cold-sponging have almost entirely displaced Graves' mixture, and Battley and ether, which, for a long time, were my only sedatives. The bromide, formerly tried, but imperfectly, and thrown aside, was revived by Dr. Tennent, at the request of the Professor of Materia Medica in the University, and has been extensively used. It is capricious, sometimes acting with excellent effect, but oftener proving useless in apparently similar circumstances. We give it in drachm doses, three times repeated, at intervals of an hour. It rarely acts, even when the best results ultimately follow, within forty-five minutes, or an hour. No dysphagia or other toxic effect has ever been observed, and its narcotic action manifests none of the dangerous tendencies of opium. Chloral, however, far excels the bromide in efficiency and certainty. In Cases 4, 6, and 7, where chloral produced prolonged sleep, followed by no recurrence of delirium, it was appealed to after the bromide had failed. *Cold sponging*, again, soothes, by the abstraction of heat from the periphery, and is consequently useful only in the acute delirium and insomnia of the acme of fever, when the skin is pungently hot, and the condition such as I usually describe by the adjective "fiery." In these circumstances, sponging with iced water every two or four hours, has often a calmative effect. During the prolonged course of Case 5, various sedatives were used. The effects of the bromide, though not so rapidly produced, were quite as good as those of the chloral in this case.

Dose of chloral. Mode of administration. Dangers.—My first cases proved conclusively that, for the class of patients under my care, forty grains is a toxic dose. It produced depression and irregularity of the heart's action. In my cases, all the benefits without the dangers of chloral were obtained with 20-grain doses for adults; 2 grains for an infant of 18 months; 3 grains for two or three years; 10 grains for children of 9 and 14 years. The drug was given in an ounce of water sweetened with half an ounce of syrup. Children take the draught quite readily in this way, and like it. If not sufficiently diluted, the medicine is vomited, as in Case 1, where 30 grains were dissolved in only half-an-ounce of water and syrup. When sufficiently diluted it may be borne by the most irritable stomach, as it was in Case 10, in which nutrient enemata were required from obstinate vomiting, and yet the chloral was not rejected. The dangers of an over dose of chloral are manifest from the cases in which 40 grains were administered. The depressing action of chloral on the cardiac ganglia is then developed. For the sake of the purity of the experiment, in some of my cases, all stimulants, and to some extent even food, were prohibited. This is, however, unnecessary, especially in view of the readiness with which the chloral, like the natural sleep, may be broken and resumed. Indeed the same rule applies here as to all the circumstances of a fever patient,—not to interrupt the regular administration of food for any cause and remembering that we are dealing with a drug which has a special action on the heart, we should first be cautious in adapting the dose to the age and vigour of the patient; and then, having given it, should watch the pulse at intervals, more particularly during the next six hours.

The mode of action of chloral.—This theoretical question assumes some practical importance when we employ chloral in typhus. According to Liebreich, the ultimate physiological action is not that of chloral, but of chloroform produced by the decomposition of chloral by the alkalies of the blood. This theory is strongly supported by the fact that chloral mixed with fresh blood does evolve chloroform. M. Personne and Dr. Richardson agree with Liebreich. Indeed M. Personne has gone further in the proof of the theory by demonstrating the presence of *chloroform in the blood* of dogs, to whom *chloral alone* had been administered. Now it is well known that the tendency of the typhus process, as it advances, is to *increase the alkalinity* of the fluids of the body. Ammonia can be detected in all the excretions in an amount much greater than in health. The urine at the close of a severe case, gives off free ammonia so copiously as to cause lachrymation, and to be sometimes quite unbearable by one auscultating the back, for example, of a patient passing it involuntarily. "There is good reason for believing," says Murchison, "that the unnatural fluid state [of the blood] in typhus results from an abnormal amount of ammonia." Whatever may be the precise pathological product, there is no doubt of the fact that typhus blood is more highly alkaline than the blood in health. Hence, if its action depends upon alkalinity at all, and M. Personne seems to have demonstrated that fact, then chloral must be *par excellence*, the hypnotic suited for typhus. Liebreich's theory is in itself beautiful and attractive, and in the words of a recent reviewer, "it is impossible not to feel a genuine admiration for the stroke of genius which is indicated in the prediction, from purely chemical considerations, that chloral would yield up chloroform to the blood in precisely the form in which it might be expected to do the maximum of good and the minimum of mischief." The illustration of the theory furnished by the rapid and magical effects of chloral in typhus involves an idea even more attractive. We transform a pathological into a therapeutic process. The fever-products liberate the soothing agent, and so calm the excitement which they themselves have made.

The subject of special susceptibility in typhus patients to the influence of chloral, in reference to the theory of its action, is one which must be reserved for future investigation. But it is entirely confirmatory of my supposition to find that there is such a susceptibility. The chemical conditions on which, according to Liebreich, the physiological action of chloral depends, exist in typhus in excess. The physiological effects of chloral ought therefore to be developed in a typhus patient with smaller doses and with greater rapidity. My experiments are few, but they are all *positive in their result*. Liebreich states that *the nervous power of the heart is the last which suffers*. Richardson says—"In fatal cases the functions destroyed are: 1. The cerebral. 2. The voluntary muscular. 3. The respiratory. 4. *The heart*." In my observation on *physiological action*, it will be seen that a dose so small as 40 grains in two out of three cases, proved toxic to the extent of developing the ultimate of the series of functional effects—that upon the heart; and that in one case even 20 grains seemed to produce this result, while the whole series of cases illustrates the striking facility with which small doses produce the primary effect on the brain and voluntary muscles, and sometimes lowers the frequency of the pulsations.—*Glasgow Medical Journal, Feb.*, 1870, *p*. 209.

114—ON THE ADMINISTRATION OF CHLOROFORM.

By the Editor of the Lancet.

[There having been lately an unusual number of deaths from chloroform, it becomes the duty of medical journalists to enquire what dangers are inseparable from its use, how far these may be obviated by special precautions, and within what limits as well as by what means the restoration of patients from conditions of peril may be hoped for.]

Taking, as the first condition of safety, the presence of a competent administrator, who shall attend to the anæsthesia alone, we may accept the rules that are generally observed with regard to preliminary abstinence, the administration of a stimulant, the loosening of the clothing, and the recumbent position. We lay no stress upon the kind of inhaler, except to observe that no inhaler will afford any security against the consequences of carelessness in its employment.

If we confine an animal in an atmosphere highly charged with chloroform, and watch the effect, we shall observe that, after the third stage is reached, the respiration becomes fainter and fainter, and presently ceases. If we then open the thorax, we find the lungs contracted and bloodless, the heart still beating. The vital function suspended is that of breathing, and all efforts to restore life must be directed to its re-establishment. It follows that the breathing and pulse should be the points to which the attention of the chloroformist should be *chiefly directed*. If it begin to flag, the inhaler should be withdrawn, and *air given*. *If* it very speedily recover, the administration may be cautiously resumed, although there will probably be some cases in which a prudent man would decline to incur this risk. If it does not recover immediately, the patient may be very gently rolled over upon his left side. In this position, time will usually bring about recovery; and the position alone will do all that can be effected by drawing out the tongue, dashing cold water on the face, and flipping with a towel. If the change of position be followed by no improvement, or if the breathing should still fail, the next step is to endeavour to restore it by artificial means. How should this be done?

We had an opportunity this week of witnessing some experiments upon rabbits, by Dr. Richardson, which appear to show that, after apparent death from chloroform, any rough handling or compression of the chest or abdomen destroys every chance of recovery, and renders those methods useless which might otherwise be employed successfully. The effect of such rough handling seems to be to paralyse the enfeebled heart, and to break another link in the chain of vital action. As a matter of precaution, therefore, it may be laid down as a rule that no attempt to procure artificial respiration by compression of the trunk should ever be made. The chief methods that remain are artificial inflation of the lungs, and excitation of the respiratory muscles by a current of induced electricity.

Inflation of the lungs was long ago advised by Dr. Snow, who suggested that it should be done from mouth to mouth. Dr. Richardson has lately contrived for the purpose a little double-action bellows, that can be procured for ten shillings, and can be worked by one hand. At the will of the operator they either exhaust or inflate; and they are furnished with a nozzle to be passed into one of the nostrils. In the case of a rabbit in which respiration had ceased, the nozzle is inserted, and the chest emptied of a portion of its chloroform-loaded air. Fresh air is then pumped in, and alternate exhaustion and inflation practised with much gentleness, until an effort at independent breathing is seen. The nozzle is then removed, and the further progress of the case is left to nature. In one experiment that we witnessed, the inflation was commenced about half a minute after the total cessation of breathing, and was continued for four minutes before any sign of life appeared. In a little while the creature was running about, and seeming none the worse for its adventures.—*Lancet, Jan.* 15, 1870, *p.* 90.

115.—MEMORANDA RESPECTING THE ADMINISTRATION OF CHLOROFORM.

Preliminaries.—1. Unless very feeble, the patient should fast for three hours before the inhalation.

2. Twenty minutes before the inhalation, a dose of brandy should be given in water—a teaspoonful to a child, one or two tablespoonfuls to an adult.

3. The patient should, whenever convenient, be wholly undressed, and, invariably, everything tight about the chest or neck should be removed.

4. If possible, let the patient be in the recumbent posture, and on his back. Let the chest and neck be well exposed. Whatever form of apparatus be used, (a piece of lint, a handkerchief, and Skinner's inhaler, are perhaps among the best), there is little or no risk with the first inhalations; and the patient may be instructed "to draw full breaths." So soon as any effect is manifest, you must be more cautious. Watch carefully the respiratory movements, and the colour of the cheeks, lips, and eyes. When convenient, keep your finger on the wrist-pulse; but this is not essential. If the patient struggle much, proceed with increased caution.

Signs of Danger—Lividity of Face.—Remove the chloroform, and let the patient have air. Open the mouth and draw out the tongue.

Stertorous Respiration.—Stop the chloroform, open the mouth, draw forward the tongue and watch carefully.

Irregular Gasping Respiration.—Stop the chloroform, splash cold water on the face, and flip with the towel.

Feeble Pulse.—Proceed with great caution. If the feebleness amount to almost complete failure, stop the administration.

Death-like Pallor—This, the most dangerous sign of all, must be met without a moment's loss of time. Flip with the wet towel on the cheeks, chest, abdomen, and limbs. Open the mouth, and if, as is usual, breathing has ceased, begin artificial respiration at once. With outspread palms, press the front of the chest forcibly down, whilst an assistant, at the same time, presses the abdomen. Make these movements not oftener than fifteen times in the minute. Air should be heard to enter the trachea. Whilst this is being done, let assistants continue most vigorously to flip the skin in all accessible positions—it cannot be done too much. If the collapse continue, let an ounce of brandy be injected into the rectum. Do not remit the artificial respiration until the patient is quite rallied. If the collapse persist, the efforts at rallying should be persevered with for an hour at least. If a large catheter be at hand, it may be well to introduce it into the trachea, and inflate the lungs by the mouth. Remember that irregular inspiratory efforts may occur long after death in all other respects has apparently taken place. Do not be deceived by them, but continue your efforts.

Remarks.—The plan of artificial respiration recommended is, we believe, all things considered, the most convenient. The catheter in the trachea is, when practicable, the most effectual plan. Its introduction is not difficult. If the artificial inspirations be made too rapidly, they defeat their own object; nor should they be too forcibly made. If it be needful to continue them more than a few minutes, the operator will find it convenient to kneel astride the patient's trunk.

The administrator ought always to have with him brandy, an enema-syringe, and a large flexible catheter. He ought always, when convenient, to require his patient to be undressed, since it may be very desirable to have the surface very accessible.

By "flipping with the towel," we mean twitching the corner of a damp towel in such a manner as to cause the sharpest pain possible. It is by far the most effectual method of awakening a chloroform patient, and should, in case of danger, be practised instanter, and at several parts at once. Its effect is to excite locally the capillary circulation, and indirectly to stimulate the respiratory muscles, and even the heart itself.—*British Medical Journal, Jan.* 1, 1870.

116.—SOME OBSERVATIONS RESPECTING THE INFLUENCE OF CHLOROFORM, &c., IN PROMOTING CUTANEOUS ABSORPTION.

By Dr. AUGUSTUS WALLER, F. R. S., of Geneva.

[Hitherto no very accurate ideas have been held by the profession as to the absorption by the skin of the different medicinal substances applied to it, as aconite, belladonna, &c. The dry condensed cuticle, and the oily secretion of the sebaceous follicles present great obstacles to rapid absorption.]

Mons. Parisot has made numerous observations on children and adults subjected to a prolonged immersion, varying from one to two hours, in baths containing strong proportions of cyanide or iodide of potassium, or an infusion of belladonna leaves. He states that in these cases he was unable to detect the presence of the substance in solution, and that with belladonna there was in no instance any dilatation of the pupils.

It is very difficult to reconcile these negative results with those of Westrumb, Homolle, and others, who have detected in the saliva and urine the presence of the above-mentioned salts after a prolonged immersion in a local bath containing them. It is very obvious that, for a settlement of these important questions, we must appeal to the more delicate tests provided by the spectrometer, as in the observations of Dr. Bence Jones, who has shown what minute quantities of lithia may be detected in the various tissues of the body.

But if, instead of employing aqueous solutions, we place various alkaloids *dissolved in* chloroform in contact with the skin, we quickly obtain evident symptoms of the absorption of these agents, which may be carried to an extent sufficient to destroy life. When a mixture of equal parts of chloroform and tincture of aconite is maintained in contact with the human skin, it rapidly produces irritation and vascularisation, which, after augmenting during the first two or three minutes, subsides gradually, and the part becomes pale, and more or less insensible, with a local decrease of temperature. Still later the part becomes insensible to the prick of a needle, though it still retains an imperfect sensibility when pressed upon. In fact, the part is in a state of superficial paralysis, which does not extend to the deeper tissues. This state of anæsthesia will continue for several hours. The two principal agents producing it are chloroform and aconite. For if the former is used alone, a certain amount of insensibility may be obtained, but it is very imperfect and evanescent compared to that produced with the intervention of the tincture of aconite.

On the other hand, when the tincture of aconite is applied alone to the skin, it may be left undisturbed without producing either symptoms of irritation or absorption, such as are evidenced by hyperæsthesia in the first stage or anæsthesia in the second stage of its action. In addition to the symptoms of anæsthesia, the mixture of aconite and chloroform is liable to produce vesication, and even a certain amount of ulceration of the cutis after having been maintained for a long time in contact with the skin. Besides these local symptoms of the absorption of aconite, there frequently exist others resulting from its general influence on the system, namely, slight nausea and a sense of depression.

On the lower animals the application of the same liquid is followed by similar local and general symptoms, which are more or less severe or fatal in proportion to the amount of surface of skin exposed to the solution. For example, when a young guinea-pig has one of its feet dipped into the solution for about a quarter of an hour, the result is invariably fatal, as is shown by the following case:—

"After five minutes' immersion, the part exposed became reddened and warm: this was quickly succeeded by complete insensibility of the integument. The foot was dipped in the liquid for ten minutes longer, then washed and dried. Soon after, the lips became pale, the general temperature decreased, slight convulsions succeeded, accompanied by dyspnœa, frothing at the mouth, and efforts at vomiting. About three hours from the commencement of the experiment, all the above symptoms were much aggravated, and death speedily followed."

With a full-grown animal the results are the same, but it requires a much longer immersion to produce them. Similar results are obtained on the dog by the application of chloroform and aconite to the ear. Local insensibility is produced, followed by symptoms of poisoning, resembling those above mentioned on the guinea-pig, which likewise terminate in the death of the animal.

As regards alcoholic solutions of aconite, the same negative evidences of their action are observed as on the human skin. But in order to study with greater precision the phenomena of absorption, either on the skin, or on any other part of the body, we must employ a means more precise and more capable of measurement than the above-mentioned symptoms. For this purpose I have been led to adopt in my investigations the albino rat. In this animal the pupils during daylight do not exceed one millimetre in diameter. They are less variable than those of most other animals, and, by the absence of black pigment in the iris and choroid, they are more easily measured. The return of the iris to its normal dimensions after its dilatation during the experiment allows us to follow the gradual elimination of the atropine from the system.

The *modus operandi* consists in maintaining one of the feet of the animal in the required solution, while the pupil is examined from time to time to recognise the moment it begins to dilate. We at once observe by this means the extreme influence which the vehicle or dissolving body exercises on the activity of absorption; for according as a chloroformic, alcoholic, or aqueous solution is employed, we may obtain dilatation of the pupil in two or three minutes, or perceive no effect after a prolonged immersion.

With a solution of atropine in chloroform of one per cent. of the alkaloid we generally obtain dilatation of the pupil in from two to five minutes. When once the dilatation has commenced, it rapidly progresses until it reaches its maximum. If after immersing the foot for a few seconds it is withdrawn, dilatation of the pupils is produced, although more slowly and less powerfully. The same is still the result if, after withdrawing the foot from the solution, it is carefully wiped and dried, showing how rapidly the atropine and chloroform penetrate into the substance of the skin.

With an alcoholic solution of the same strength as the above little or no effect is obtained after half an hour or an hour.

With a solution of atropine in water containing a few drops of acetic acid absorption is also very slow, generally producing no dilatation after thirty minutes. When withdrawn from the solution and exposed to the air, a slight dilatation of the pupil is obtained after a short time.

Extract of belladonna applied over the leg produced no dilatation at the end of an hour.

With a solution of strychnine and chloroform, dilatation of the pupils was observed at the end of three minutes. After five minutes slight convulsions about the larynx were observed, extending afterwards to the extremities, which were soon followed by tetanic convulsions, and finally by death.

An alcoholic solution of strychnia produced no symptoms whatever of the presence of strychnia after thirty-five minutes.

When the atropine is dissolved in a liquid consisting of equal parts of chloroform and alcohol, a considerable dilatation is observed after three minutes.

With one part of chloroform and four parts of alcohol, atropine produced dilatation at the end of nine minutes. With atropine dissolved in essence of turpentine, little or no dilatation was produced while the extremity remained in the liquid, but if after ten minutes immersion it is removed, dilatation of the pupils commences at once and soon attains its maximum.

It is almost superfluous to remark that with chloroform alone dilatation is not produced.

On repeating my experiments with chloroform and atropine, Mons. Parisot obtained upon himself the same results as those I had already observed upon the lower animals. He states, that on applying over the forehead alcoholic and chloroformic solutions of atropine, a compress of cotton imbibed with the chloroformic solution produced heat, redness, and commencing dilatation of the pupils, nearly equal on both sides. With the alcoholic solution, no effect was obtained after two minutes' application, but after thirty minutes there was commencement of dilatation.

As far as regards myself, I have not been so successful as Mons. Parisot; and when we consider the small amount of surface exposed to the action of the topic, probably not $\frac{1}{500}$th part of the surface of the body, it would be remarkable if we could obtain the same results as those which I have described on animals, where the surface exposed is relatively so much greater, and equal to at least the tenth part of the surface of the animal. I can therefore only attribute the results of Mons. Parisot to some idiosyncrasy of an exceptional nature.

The foot of an albino rat was immersed in a solution of equal parts of tincture of opium and chloroform. After twelve minutes' immersion the limb was nearly insensible. After five minutes' longer immersion there were symptoms of somnolency, which continued to increase. The eyes were dull. The animal started at any sudden blow on the table, and moved a few steps; when near the edge fell over. Pupils were contracted. Two hours afterwards the animal had nearly recovered.

After fourteen minutes' immersion in a mixture of equal parts of alcohol and a chloroformic solution of morphia, the skin of the part immersed was insensible, as in the case above-mentioned. The pupils were generally much contracted, the eyes half-closed and very dull. At the end of half an hour the animal had nearly recovered.

A small quantity of acetate of morphia was introduced by means of a coarse *thread soaked* in a solution of morphia in the proportion of two grains of the alkaloid to one drachm of chloroform. After the thread had been dried, it was introduced beneath the skin to the extent of about the third of an inch. Twenty minutes afterwards the animal became drowsy and gradually was narcotised, presenting all the symptoms mentioned in the previous instance.

When in a state of narcotism from opiates the pupils in the albino rat are generally contracted, but in some cases they are much dilated, contracting considerably whenever the animal is aroused by some strong irritation. This discrepancy is probably owing to the peculiar irritability of the retina and intolerance of light in this animal, for in other animals narcosis by opiates produces contraction of the pupil as on man.

With regard to the influence of alcohol when mixed with chloroform, we find that, instead of retarding, it rather accelerates absorption. Thus, with atropine dissolved in equal parts of chloroform and alcohol, the dilatation of the pupil is manifestly more speedy than with chloroform alone, being generally two minutes in advance of the latter on full-grown animals. With a mixture of three parts of alcohol to one of chloroform, absorption appears to be as active as when the proportion of chloroform is much greater.

The addition of astringents to a solution of atropine and chloroform has no influence in retarding the absorption of the atropine.

The principal conclusions from the foregoing experiments are:

1. Chloroformic solutions applied to the skin of man and animals are quickly absorbed, and produce local and general results according to the substances employed.
2. Alcoholic and aqueous solutions are either not at all or very slowly absorbed.
3. Chloroform easily traverses the dead skin by diffusion.
4. Alcohol does not traverse the skin, but produces an endosmotic current with water.
5. Skin exposed to chloroform in a state of liquid or vapour absorbs a considerable quantity of it.
6. On traversing the septal skin of the endosmometer, chloroform carries with it a certain amount of any alkaloid dissolved in it.
7. These observations sufficiently explain the rapidity of cutaneous absorption during life, without our having recourse to any problematic influence of sebaceous matter on the surface of the skin.—*Practitioner*, *Dec.*, 1869, *p.* 329.

117.—ON THE USE OF NITROUS OXIDE GAS AS AN ANÆSTHETIC IN SURGERY, WITH COXETER'S LIQUID GAS.

By Charles James Fox, Esq., Dental Surgeon to the Dental Hospital of London, and to the Great Northern Hospital.

It is difficult to witness daily the delight of those who, in my specialty have experienced the relief afforded by the gas, and compare it with the torpid misery of those who have been relieved from their pain under the influence of chloroform, without feeling an almost irrepressible desire to see the comfort of the gas extended to those who have to undergo more severe operations. This must be my excuse for entering upon a field which might be more fitly occupied by some of those whose practice is more exclusively devoted to general surgery; but I am so impressed with the belief that this anæsthetic would, if properly and fairly tried in general surgery, prove an inestimable boon in thousands of cases, that I cannot refrain from endeavouring to turn the attention of medical men more earnestly to the subject. I am far from desiring to depreciate the value of chloroform; in many cases it will continue to be the only anæsthetic that can or may be used: and, if I may be allowed a short digression, I would add, that the rapidity with which a patient is anæsthetised by it is as much greater, and his recovery therefrom is as much more satisfactory, when Mr. Clover's apparatus is employed instead of any other mode of inhalation, as—so far as my experience goes—the effect of nitrous oxide is more satisfactory on both points, than that of chloroform by *any* mode of administration.

I should be very sorry to have it supposed from the above remarks that I do not believe it possible to have a fatal case with nitrous oxide. I should be rash indeed were I to advance any such opinion, and every additional case only makes me more cautious, more watchful, lest a fatality, that may occur to any of us, may fall to my lot; but as yet only one death has ever been *directly* ascribed to the use of the gas, and that took place six years ago. In urging its adoption in general surgery, I am aware that I am largely increasing the chances of a fatal case occurring, not so much from the increase in the number of cases as from the fact that it will be more frequently given to patients whose diseased state renders them less able to encounter any such change from their normal condition, whether induced by chloroform or gas.

The reasons why I advocate the use of nitrous oxide in surgery are—

1st. Its safety.

2nd. The rapidity with which anæsthesia can be induced—viz., from 50 to 100 seconds.

3rd. The readiness with which a patient can either be kept for a prolonged period in the anæsthetic state, or, if the surgeon so wills, can be promptly and thoroughly awakened.

4th. Because it is actually pleasant to the patient to inhale, and, therefore, much fright and mental distress is avoided, diminishing the danger of death by syncope.

5th. Because the recovery is usually bright, pleasant, and complete, any after discomfort being extremely rare.

6th. Because sickness has never, to my knowledge, occurred during the administration of this anæsthetic, and but *rarely* afterwards.

First, then, as to its safety. As far as we can judge from statistics, up to the present time it is the safest anæsthetic in use; but then, with but few exceptions, it has only been used in short operations—such as the extraction of teeth. On the other hand, it must be borne in mind that many of the deaths from chloroform have occurred in just such cases, and, moreover, that when greater operations have been contemplated, death from chloroform has most frequently occurred in the first few minutes of inhalation. Nevertheless, until nitrous oxide has been extensively used in capital operations, I cannot plead more positively for its greater safety than I have already done, further than to repeat that, as far as it has been tried, it *has* proved the safest anæsthetic, and we have every right, upon the evidence before us, to trust it until the reverse is proved.

2nd. The rapidity with which anæsthesia can be induced, varying from a minute to a minute and a half, results in a great saving of time to an operator at an hospital, his colleagues, and the assembled students. Besides, all sense of consciousness to surrounding objects is most frequently lost in from thirty to sixty seconds, although not insensibility to pain; apart from the saving of time, surely this must be admitted to be an additional source of safety to the patient, inasmuch as a long period of nervous fright and terror is quickly passed over, and there is, therefore, far less danger of that death from fright to which we so often hear allusions made when a fatal chloroform case occurs.

3rd. With regard to my third reason, it may happen that a patient is brought to the table for an injury to be painfully examined with bistoury and probe, with the understanding that possibly a severe operation may be the result. Should it happen, as it sometimes does, that the result is favourable, how preferable it is to be able to allow patients to wake up promptly to the pleasing intelligence, rather than that they should endure hours of depression and nausea for so simple a matter; on the other hand, should operation be determined upon, there is no difficulty in maintaining the anæsthesia.

4th. The fact that the gas is pleasant to inhale tends also very far to reassure a nervous patient. In over 15000 cases I have not met with more than three or four who professed to dislike the slightly sweetish taste of the gas, and the probability is, had they inhaled chloroform, this dislike would have been much more strongly expressed.

5th. The bright and rapid recovery, free from all unpleasant results, appears to me a great argument in favour of the gas. It often happens that short sharp operations have to be performed, which in themselves would not incapacitate patients from leaving the hospital at once; but, from the effects of chloroform, they are obliged to remain on a bed in the ward, sometimes for hours after, to the additional labour of nurses and the distress of their friends; whereas, if they had inhaled nitrous oxide, they are able at once to leave the hospital, feeling nothing worse than the smarting of the wound.

A singular case in evidence of the fact that no after ill-effects result from the gas I have permission to mention it is; that of M. Blondin, who on two occasions performed all his most difficult feats on the high rope, 400 feet long, within three hours after I had given him the gas for some extremely severe dental operations. If ever a clear head and steady nerves were needed so soon after an anæsthetic, it must be confessed his was a pretty severe test for them. That the gas is actually pleasant to patients I have been repeatedly assured by them, and those who have had chloroform often previously, have warmly declared their preference for the gas. I am speaking now especially of surgical cases.

6th. With reference to the sixth argument in favour of the gas, in many operations it is a very important one; but it is one that can only be maintained after a prolonged trial of the gas in several operations. As yet I have never seen a patient become sick in the course of inhaling; only once I have known a patient express herself as feeling sick from nervousness, and she was actually so immediately the face-piece was applied. She told me that the slightest unusual excitement brought on sickness with her. In the large number of cases that I have now seen I have only met with four cases of sickness after the operation, and the patients were all right directly they had been sick.

[Several reasons may be assigned for the fact of nitrous oxide gas not having come into favour as an anæsthetic in surgical cases, especially its milkiness, and the trouble and expense involved in fitting up an apparatus for its manufacture and storage. Subsequently Messrs. Barth supplied the gas compressed in iron bottles, containing fifteen gallons each, but as three of these were used in an operation lasting twenty minutes, the necessity of their being made to contain a larger quantity of gas was evident.]

At last, one night at the Medical Society of London, I saw the large bottles of compressed oxygen and hydrogen which were employed by Dr. Thudichum in his illustrations of spectral analysis. In them I saw—at least for a time—the solution of the difficulty, and happily succeeded in convincing Messrs. Coxeter and Son that if these bottles could be filled in a similar manner with compressed nitrous oxide a great want would be partially met.

They at once set to work energetically in response to my appeal, as mentioned in my letter to the *Lancet* of Jan. 2nd, 1869, to supply us with the vessels containing respectively forty-five and ninety gallons of gas, which are now so well known. Still, although a great improvement, this was not yet sufficiently portable to win the support of the surgeon. For the dentist, who was always at home, it mattered little, but to the surgeon and the visiting anæsthetist it was everything. I never dropped the hope that liquid gas might be produced at a moderate cost, and never ceased to persecute Messrs. Coxeter on the subject: but they entered most zealously into my views, and on the 1st of November, 1869, I was requested by them to visit their office with Mr. Clover, to test the liquid gas. Finding it as efficient in its effects as what they had already supplied, they set to work with goodwill, and after months of labour, and at great cost, they have at last succeeded in producing a supply of liquid gas, from the first hundred-gallon vessel of which I administered the gas with uniform success to several patients at the Dental Hospital of London on Monday, Feb. 21st, 1870.

The vessels in which the liquid gas is contained are of the same form and make as the large iron vessels hitherto used by Messrs. Coxeter, only differing in size.

They are made of wrought iron, and their weight and dimensions are as follows:—

Vessel A, to contain *one hundred gallons* of gas in the liquid state, is 12 inches long, and 3¼ inches in diameter, and weighs 9 lb. 1 oz.

Vessel B, to contain *fifty gallons*, is 8½ inches long, 3 inches in diameter, and weighs 5 lb. 11 oz.

Vessel C, to contain *twenty-five gallons*, is 6 inches long, 2 inches in diameter, and weighs 3 lb. 5 oz.

A screw stopcock for controlling the exit of the gas is 2 inches long in each vessel.

Hence it will be seen that a good supply of gas, with apparatus complete can be packed in a small portable case.

To each vessel, when in use, is attached what is commonly known as a Cattlin's bag, which, being about a foot in diameter, receives the first force of the liberated gas delivered through a small tube; and then from it the gas is inspired, with Mr. Clover's face-piece and two-wayed stopcock through a tube 1 inch in diameter.

The extraordinary degree in which the bulk of the gas is diminished by being liquefied will be better understood when I state that one of Mr. Coxeter's present 90-gallon bottles could by this process be made to contain 1000 gallons of gas.

There is one important advantage obtained by the use of this liquid gas, and that is the ability to ascertain to a nicety, after an operation, how much gas is still left in the bottle. The want of this was one of the many obstacles which prevented the gas from being much adopted by surgeons; but in this case each bottle is stamped with its weight when empty, and the difference at any time between the *actual* weight and that stamped on the vessel will give the quantity remaining in the vessel.

This may be readily calculated when we remember that, according to Dr. M'Adams's revised edition of Dr. Wilson's little work on "Inorganic Chemistry," published by Chambers, 100 cubic inches of the gas weigh 47·29 grains; and therefore 30 oz. by weight is equal to 100 gallons by measure, three-tenths of an ounce being equal to one gallon.

As to the quality and anæsthetic powers of this liquid gas, it is so far better than that kept in gasometers, that much less of the liquid gas is needed to produce anæsthesia, and I believe I may say the anæsthesia is more profound. I have long noticed this superiority of the compressed gas over the ordinary gas in gasometers, and I believe liquid gas is even more efficient than the compressed gas.

It has been suggested that there is some danger in the use of such a powerfully compressed gas. On this subject I cannot do better than quote the excellent remarks of Dr. Evans, of Paris, in his communication on liquid gas to the *British Journal of Dental Science*, in July, 1868:—

"Before dentists and surgeons will use the liquefied gas, they must first be assured of its safety. The idea of holding in the hand or carrying in the pocket a bottle within which there is an active bursting force of 750 lb. to the square inch, is certainly scarcely comfortable to a naturally timid man. But a consideration of the facts which bear upon this point will, I think, remove all apprehension, and cause everyone to feel that there can be little, if any, danger when the gas is confined in properly constructed bottles.

"A common glass eau-de-seltz bottle is charged under a pressure of about 100 lb. to the square inch. These bottles are not generally considered as dangerous. They are more likely to burst, however, than bronze bottles of similar form and thickness under ten times that pressure. A fowling-piece when discharged, is subjected to a bursting force of from 10,000 lb. to 15,000 lb. per square inch, or *twenty* times the bursting force of the liquid gas; these two very familiar facts are sufficient to show that there is relatively little danger to be apprehended from the gas."

I should occupy too much time were I to give any account of the physical properties of this truly wonderful liquid gas; moreover, it would be superfluous for me to do so. It is not a thing of to-day; it has been well known to chemists for years past, and full accounts of it may be found in the text-books on chemistry, but it has never yet been produced in any quantity, nor for any other purpose than for experiment or exhibition, until this moment, when we are indebted to the enterprise of Messrs. Coxeter and Son for a supply which will, I trust, only be limited by the demand.—*Lancet, April* 2 *and* 9, 1870, *pp.* 474, 516.

118.—ON RAPID GENERAL ANÆSTHESIA FOR SHORT OPERATIONS—METHYL-ETHYLIC ETHER.

By Dr. B. W. Richardson, F. R. S.

The author made a communication to the Medical Society of London on the Production of rapid general Anæsthesia for short Operations; and at the same time introduced a new anæsthetic compound for that purpose. He began by explaining that, within the past two or three years, a practice had been followed of producing quick insensibility which should be followed by equally quick recovery. Two agents had been employed for this purpose: (*a*) nitrous oxide gas; (*b*) bichloride of methylene. Admitting that the principle of producing quick insensibility had a practical intention and usefulness, Dr. Richardson said he had an objection to the methods which, up to the present time, were adopted for carrying the principle into practice. His objections to nitrous oxide gas were as firm as ever. He held still that the employment of an agent which excluded all atmospheric air during inhalation, which produced the most perfect asphyxia, which required for its administration costly and troublesome apparatus, and which if administered beyond a given period, even for a few seconds, must of necessity kill, was a bad agent for anæsthetic administration—was, in fact, a rude and vulgar process, retrogressive in science. Respecting bichloride of methylene, though it was hard to speak against any application of a remedy which he, the author, had introduced, he must be candid and say that he was not favourably impressed with the application of bichloride for *quick* general anæsthesia. That it was marvellously rapid in its action was true, that it answered the end had in view was true, and that it had now been used for rapid inhalation an immense number of times was also true; but these facts could not conceal the further and all-important fact that the bichloride of methylene belonged to a dangerous family of chemical substances, and could not therefore be played with without risk. It had been extolled as being safer than chloroform; and that was allowed, for, as it contained an equivalent of chlorine less than chloroform, it was materially safer. But the safety was relative, not absolute. Under these impressions the author was led recently to review experimentally the action of the whole of the more promising anæsthetic fluids and vapours, including chloride of methyl, bichloride of methylene, chloroform, amylene, hydride of methyl, ethylic ether, methylic ether, and some others, which were given on a table placed before the Society. The result was that he had decided in favour of methylic ether for rapid anæsthesia. The anæsthetic properties of methylic ether were first discovered by Dr. Richardson in 1867, and the substance has been reported upon by him in two reports to the British Association for the Advancement of Science. On the 20th of May, 1868, he inhaled it for the first time himself. Dr. Sedgwick and Mr. Peter Marshall administered it to him to complete insensibility. He was narcotised completely in one minute, was unconscious in seventy seconds, and recovered almost instantaneously without nausea, headache, or other unpleasant symptom. From that time the author has been in the habit of narcotising occasionally with methylic ether, and recently with marked success. The ether is made by digesting one part of pure methylic alcohol with two of strong sulphuric acid. The mixture is heated, and the methylic ether, which passes over as a gas, is subjected to frequent washings in a strong solution of potash. The ether remains as a gas even below zero; it has an ethereal odour; it is chemically an oxide of the radical methyl; and its vapour density is 23, taking hydrogen as unity. The strongest objection to methylic ether is that it is a gas; but, happily, that difficulty is to a large extent overcome, the gas being very soluble in various substances; water takes up 37 volumes of the gas, yielding an ethereal fluid of a very pleasant taste; pure ethylic ether and alcohol take up over 100 volumes, and chloroform and bichloride of methylene nearly as much. For practical purposes, the author prefers absolute ethylic ether of specific gravity 720, and boiling point of 920° Fahr., as the solvent. The ether is charged with the gas at a temperature of 32° Fahr., and the compound is at once bottled and firmly corked down. It should be kept for a time before being used, the process of keeping producing a comparatively stable compound. In using this compound, which he proposes to call *methyl-ethylic ether*, the author at present employs the simple mouthpiece invented by Mr. Rendle, and made merely of leather. He is adding to this a reserve bag, in order to conserve the ether. From one to two drachms may be put into the inhaler for quick narcotisation.

Dr. Richardson next described cases in which the methylic ether had been administered to the human subject for the extraction of teeth. In eleven cases, the whole operation, from commencement of the inhalation to the complete recovery, was under three minutes; in several cases, one minute was sufficient; while in two cases forty-five seconds sufficed. In no case was there spasm, syncope, or asphyxia during inhalation, or any after-nausea, and in all cases there was a semi-consciousness, so that the patients did what they were bade to do, remembered what had been done, and yet were not conscious of pain. The author next described the action of methyl-ethylic ether on the nervous centres, comparing it with chloroform and other anæsthetics containing chlorine. He showed that this ether produced no excitation of the nervous centres which supply the vascular system, as chloroform does, and that, consequently, there was absence of muscular spasm, of contraction of blood-vessels, and of syncope from fatal contraction of the heart. When it was carried to the extent of arresting life in the inferior animals, it produced death by paralysing the organic nervous centres. This extreme result was preceded by convulsive action similar to that which is seen in death from hemorrhage, the convulsion being due to the absence of arterialised blood in the muscles. So well, however, did the heart still retain its power, that in one case, in a lower warm-blooded animal, a guinea-pig, the respiration returned *spontaneously* in pure air, four minutes and forty-five seconds after it had ceased. No fact could more definitely speak in favour of the safety of the agent. In conclusion, the author said that as he had confined himself this time to rapid anæsthesia for short operations, his remarks must be taken as bearing on that subject only. He had introduced methyl-ethylic ether as the readiest and best agent he knew of for the purpose described. It was better than nitrous oxide gas, because it allowed air to be given with it, and did not asphyxiate. It was better than bichloride of methylene, because it did not produced muscular spasm and syncope. At the same time, he did not consider it as perfect, nor should he consider general anæsthesia perfected until he, or some other observer, should discover an agent that will destroy sensibility without interfering at all with organic muscular life, volitional power, or consciousness. Methylic ether approached this perfection, though it did not touch it, and it encouraged perseverance in experimental research.—*Lancet, April* 2, 1870, *p.* 483.

119.—NOTES ON THE SUBCUTANEOUS INJECTION OF MORPHIA.

By Dr. Edward T. Wilson, Cheltenham.

[Whichever salt of morphia is used it is of the utmost importance that the solvent be water, and water only. The solutions prepared with acetic acid, and neutralised as recommended by the Committee on Hypodermic Injection invariably cause smarting, and prolonged tenderness of the punctured part. A solution containing three grains of acetate of morphia to the drachm of water is very convenient. When the whole body is open for selection, the dorsal surface of the arm and forearm, and the outer side of the calf, are the *best spots for injection*, as being the least sensitive to pain.]

A fold of skin having being raised between the finger and thumb, the point should be introduced steadily and quickly—not by a sudden prick or corkscrew movement—taking care that the whole thickness of the skin is penetrated, and that cellular tissue has been reached. The injection of a large quantity of fluid beneath the skin is usually attended with an angry-looking swelling, which has seemed beneficial in relieving the pain and tension at the punctured part, and need give no alarm, provided the solvent employed is of an unirritating nature, and no air has entered with it.

On withdrawing the tube, however small the injection may have been, it is advisable to secure the puncture with a piece of court or other plaster. In this I find myself opposed to Dr. Anstie; but cases have occurred in my own practice where much of the solution has oozed out from lack of this simple precaution.

When introducing the fluid, especially in an untried case, it is of the utmost importance to inject slowly. As the morphia enters drop by drop, the results of each turn of the piston can be noted on the pulse, the pupils, the stomach, and the nervous system generally. The most deadly faints I have seen were undoubtedly caused by too rapid absorption of the narcotic, either from hurried injection or from the accidental injury (?) of lymphatics, which became inflamed, and resembled raised cords on the surface of the skin. In these latter cases the effects were invariably sudden and severe.

In first cases I have usually allowed from three to five minutes to each minim of the solution (gr. iij. ad ʒj.), pausing at the first intimation of nausea, faintness, or marked alleviation of symptoms. With these precautions, I have never, in some thousands of injections, met with any ill effects that a glass of brandy-and-water did not quickly relieve.

The great importance of slow injection has been impressed on me more particularly by a case in which large quantities of morphia were used; and the first few drops, if rapidly introduced, invariably caused a nausea, which soon passed off; the large residuum could then be injected quickly and with safety; whereas, an increase during the nausea, would induce most threatening symptoms of prostration.

There are, however, cases of idiosyncrasy, and they must be borne in mind, where opium in any form and dose produces its depressing effects, to the exclusion of all others. A good instance of this kind occurs in Dr. Harley's admirable work on The Old Vegetable Neurotics, where one-seventh of a grain of morphia, injected for neuralgia in an excitable woman aged 40, produced at forty minutes symptoms resembling intoxication; at two hours oppression of the chest, faintness, vomiting, irregular pulse, and other symptoms of intense depression, which did not go off for four hours; but, it is added, six drops of laudanum by the stomach had always made her faint and sick. Another case may be quoted from the Report of the Committee on Hypodermic Injection, where the injection of a quarter of a grain of morphia was followed in five minutes by sinking of the heart, inability to stand, and repeated attacks of syncope (without any pulse), with the most urgent symptoms of prostration, which were only relieved by stimulants and galvanism. Unfortunately the rate at which the injections were made is not noted in either instance.

It is impossible to judge, without a trial in each individual case, whether the excitant or depressing effects of morphia will predominate; and so strongly impressed is Dr. Harley by the dangerous uncertainty in first injections, that he considers morphia should never be injected alone, unless there is reason to know that the patient will experience no ill effects. It should always, in his opinion, be combined with one ninety-sixth of a grain of sulphate of atropia, which he has found to counteract the depressant and nauseating effects of the simple drug.

My own experience of this combination is, as yet, too limited to enable me to speak with confidence on the point; but in one case where it was tried, even the one-ninety-sixth of a grain of sulphate of atropia produced such dryness of the fauces, and general irritability of the nervous system, that it had to be discontinued. There was probably some peculiar susceptibility to the action of belladonna, for one-fortieth of a grain injected on a previous occasion had produced most violent delirium, and distressing feelings of suffocation and oppression.

The excitant action of morphia has been shown to be more frequent in women than in men, and it will be well to act always on this presumption.

Dose.—The initial dose must of course be graduated according to the individual and the nature of the disease; but it appears to have been dangerously large in most of the recorded cases—a quarter, a third, one, and even two grains are spoken of; and it is little wonder that depressing and even fatal consequences have been the result in some instances. My own experience leads me to agree entirely with Dr. Anstie, that a quarter of a grain of morphia is, as a rule, an unsafe dose to commence with. In a neuralgic case, given by Mr. F. Woodhouse Braine (Medical Times and Gazette, Jan. 4, 1867), one-third of a grain of morphia injected over the insertion of the deltoïd caused dangerous symptoms in fifteen seconds; no mention is made of the rate of injection. In a case of mania, half a grain proved fatal; and a similar dose narcotised another patient for four days. Dangerous symptoms have been found to follow the injection of a quarter of a grain.

After-effects.—The period of absorption is stated by the Committee on Hypodermic Injection to be from four to ten minutes: but it is often much shorter. One case has been mentioned above in which symptoms followed in fifteen seconds; and I have found that commencing relief from pain is usually perceived in three minutes, if a sufficient quantity of the drug has been introduced at once. On the other hand, after repeated injections, the matting of the cellular tissue may so far impede absorption that the effects are not perceptible under at least half an hour.

Setting aside the choice of methods, and confining our attention to the hypodermic injection, what are the indications for its use, and what for avoiding it? There are perhaps few cases of pain where it cannot be used tentatively in the way I have described; but reliable data on this point are sadly wanting, and those who have had most experience will consider well before introducing morphia where pain is referred to the brain or its membranes. There are undoubtedly cases in which its administration is fraught with the most imminent danger, and a death immediately succeeding the injection is regarded with much suspicion by the friends of the patient. The condition of the brain, as ascertained by symptoms, must in general decide whether morphia is to be withheld or injected; and there are probably few who would venture where inflammation or congestion of the brain had been made out to exist.

Charles Hunter recommends it in acute mania and insomnia generally. Dr. Lockhart Robertson has used half a grain of morphia every four hours with advantage in cases of acute asthenic mania, and one grain for an initial injection in melancholia.

Dr. E. Fox, of Bristol, has used one grain five times daily for weeks in the same disease. Delirium tremens has been treated successfully; and in the spanæmic condition of brain found in epileptics the morphia acts like a charm, subduing the pain of epileptic neuralgia, and postponing, if not preventing, a convulsive seizure.

The wiry pulse at the wrist and in the carotids becomes soft and full, and the painful feeling of constriction about the glottis is at once relieved.

In sea-sickness and in the sickness of pregnancy, the injection of morphia has given great relief. I have also found it useful in checking the violent retching and pain of a bilious attack, whilst other remedies were acting more immediately on the offending organs. Violent and distressed hiccough, which had lasted for more than twenty minutes, was at once stopped by a small quantity of morphia.

From the known action of opium, much benefit would naturally be expected from the injection of morphia in painful spasm, whether of the bowels, the ureters, or the gall-ducts. In colic, intussusception of the gut, passage of gall-stones, and of calculous matter from the kidney, relief is usually prompt and effectual. One case of the latter I may mention. A gentleman was seized with rigor, nausea, and intense lumbar pain, just as he was about to sit down at a dinner-party. Morphia and a syringe were fortunately at hand, and one-fifth of a grain was at once injected into the forearm. Complete relief followed in three minutes ; the patient ate a hearty dinner, passed a comfortable evening in the drawing-room, and I promised to call and see him the next day. In the morning he had slept well, felt perfectly comfortable, and produced with evident satisfaction a small calculus (mulberry with phosphatic shell) which had passed with the morning urine.

For neuralgias generally, tic, lumbago, sciatica, the injection of morphia is now all but a specific. Relief is always speedy, and not seldom permanent. Possibly, in cases of this class, the addition of atropine to the morphia, as recommended by Dr. Harley, may increase the chances of a permanent cure.

A paroxysm of gout has been relieved in Dr. Leavitt's hands by one-third of a grain of morphia. So also have the lancinating pains of acute pleurisy. I have found it of great temporary benefit in painful rheumatic joints (chronic), and where calculus has been impacted in the kidney. Rest and ease, though it be but temporary, are no mean results to promise a worn and enfeebled sufferer ; but where all hope of cure is past, and our only endeavour is

> " To ease the victim no device can save,
> And smooth the stormy passage to the grave,"

in scirrhus of the breast or of the uterus, no alleviation is at once so certain, so lasting, and so welcome, as that derived from the subcutaneous injection of morphia.

The superiority of injection over administration by the mouth is nowhere more marked than in those cases where prolonged suffering necessitates the constant use of morphia over months or years. In the case of epileptic neuralgia before alluded to, in which, for two years and eight months past, almost every respite from pain has been won by morphia, subcutaneously injected, the only real inconvenience, and that of recent date, is a troublesome constipation, due probably as much to the torpid habits and heated rooms in which life is passed as to the special action of the drug.

In conclusion, I will venture to repeat three points on which, insignificant though they seem, I should wish to lay special stress :

1. That the solvent for the morphia should be distilled water without any admixture of acid.
2. That the initial dose should be much smaller than that usually given.
3. That the injection should be performed slowly.

With these precautions, morphia may be introduced into the system safely, and for indefinite periods, with but slight disturbance of the bodily functions.

I cannot close this very imperfect notice of morphia injection without expressing my opinion that the subcutaneous exhibition of drugs is the greatest boon given to medicine since the discovery of chloroform ; and, judging from some experience as far as morphia is concerned, I would part with every drug in the pharmacopœia sooner than relinquish a power of relieving pain at once so prompt, so safe, and so easy of application.—*St. George's Hospital Reports, Vol.* iv., 1869, *p.* 19.

120.—SOME CASES IN WHICH THE HYPODERMIC INJECTION OF MORPHIA WAS EMPLOYED WITH GOOD RESULTS.

By Dr. John Barclay, Banff.

Case of large umbilical hernia, reducible ; but obstruction of the bowels, pain, and obstinate vomiting.—July 4th, 1868. Mrs. J., aged 64, has had an umbilical hernia for twenty-two years. She has had six children, the youngest of whom is now twenty-three years of age. She says the rupture began one year after her last labour without any known cause, and from being at first of the size of a marble, the tumour gradually increased in bulk until now it is as large as an adult head. It has often caused her much pain and sickness. It is always easily reduced when in the supine position; but immediately on resuming the erect posture, or withdrawing pressure, the mass of intestine again protrudes. On July 2nd she had been vomiting all day, but had no pain. Yesterday, July 3rd, she experienced a sudden and severe pain in the swelling, followed by sickness and persistent vomiting. For three days before this her bowels had not been moved. Pulse small and quick; urine scanty and high-coloured; great thirst; tongue dry and brown. Dr. Manson saw her to-day, and ordered sulphate of magnesia with magnesia mixture every two hours till the bowels should be freely opened, and pills, containing each a grain and a half of opium, every four hours, if necessary, to relieve the pain; mustard also to be applied smartly over the stomach, and warm fomentations. But neither the mixture nor the pills remained on the stomach.

July 5th. Ordered copious purgative enemeta, which were twice given without relief to the symptoms. On the evening of this day eighteen minims of the solution of morphia were injected under the skin over the stomach, and an ounce and a half of castor-oil ordered to be given half an hour after.

July 6th. The castor-oil was taken at half-past seven yesterday evening, and was not vomited. All pains disappeared in twenty minutes after the morphia was injected, and there was no more vomiting till about half-past two this morning, and even then all that came up was a mouthful of mucus. The oil operated at nine o'clock this morning freely, and the dejecta were very offensive.

10 p. m. Since the purging began she has been once or twice somewhat sick, but has not vomited anything unless a mouthful of ginger beer, part of a too free draught of that beverage. Pulse 72, regular; skin warm and moist; feels much better, but weak; no pain; the edges of the tongue cleaning, its centre still covered with a brown fur. Has a good deal of thirst; urine copious and clear. Ordered ice and effervescing drink, and perfect rest.

July 7th. Has some pain to-day, but no vomiting; bowels have been once freely opened; urine copious and clear. I, however, injected twenty minims of the morphia solution.

July 8th. Feels much better to-day; no pain; has slept well; no vomiting; bowels have been freely opened. Pulse 72: skin cool and moist; urine clear; tongue much cleaner; appetite returning. As there is some thirst, to continue the effervescing mixture.

July 9th. Feels quite recovered.

The above case shows how rapidly and completely successful the hypodermic treatment was in subduing the pain and vomiting, and allowing a full dose of castor-oil to remain on the stomach and exert its laxative effect. Previous to injecting the morphia it was impossible to get anything to remain on the stomach in the shape of either food or medicine. In the greater number of cases of obstinate vomiting, either the calomel and opium pill or the magnesia and sulphate of magnesia mixture, acts as a charm in combating this symptom. Here, however, they failed.

Obstructed bowels; great pain; constant vomiting; failure of various remedies for six days; success of the morphia injection.—Sept. 23, 1867. E. W., unmarried, aged 24, had, on the evening of the 21st, taken a smart dose of senna and salts, which had operated powerfully during the night and all next day down to six o'clock p. m. On the afternoon of the 23rd she was suddenly seized with severe pain in the abdomen, a little above the navel, accompanied with retching and vomiting. She seemed in great agony; her pulse small, and 96 per minute. I ordered a pill, containing a grain and a half of opium, every four hours till relieved, and a plaster, composed of extract of opium and mercurial ointment, a drachm to the ounce, to be applied over the belly, and a light poultice over all.

Sept. 24th. Vomiting continues as severe as before; pain very little relieved; pulse 120, small; great thirst; urine scanty and red; no movement of the bowels since the evening of the 22nd. Ordered ice to be swallowed, the ointment plaster to be renewed on the belly, laudanum enemata, and nourishment to be given in small but frequent quantities.

Sept. 25th. Symptoms remain as observed yesterday; pulse 125, small; pain very little relieved; vomiting as severe as before; urine scanty. Ordered a calomel and opium pill every four hours, and laudanum enemata.

Sept. 26th. Symptoms very urgent, indeed; patient seems much worse;

tongue and teeth covered with sordes; pulse 130, small; no movement of the bowels; great pain in the abdomen; vomiting of green bile incessant. Ordered the calomel and opium pills to be continued, strong purgative enemata to be administered, and repeated at intervals, and a blister to be applied over the belly.

Sept. 27. Patient much in the same state as yesterday; pain very severe; vomiting still the same; nothing was brought away by the enemata. At a consultation to-day, Dr. Manson recommended a trial of the sulphate of magnesia and magnesia mixture, which was accordingly ordered.

9 p.m. No improvement; the blister, which had risen well, did not relieve the pain or vomiting. The mixture was vomited every time. No movement of the bowels. To persevere with the purgative enema, iced champagne, and jelly of beef.

Sept. 28th. Much in the same state as yesterday.

Sept. 29th. Still no improvement; seems in a hopeless state; pulse 130, and very small; countenance pinched and anxious; intense thirst; great pain in the belly; no movement of the bowels; vomiting as severe as ever; has kept nothing whatever on the stomach; urine very small in quantity, and red. It now occurred to me to try the effect of the hypodermic injection of morphia in the skin over the stomach, fancying it might produce not only a general and sedative effect and relief from pain, but perhaps a local one, also, on the muscles concerned in the act of vomiting, and on the peristaltic action of the intestines. Accordingly, I sent for the syringe and injected fifteen minims of the solution over the stomach, and gave orders that in about three-quarters of an hour after, when probably the full effect of the morphia would be set up, a draught of warm castor-oil and laudanum, an ounce of the one and fifteen drops of the other, should be given, and if vomited to be repeated immediately.

10 p.m. To my great surprise, I was told that the hypodermic injection had had the desired effect. The pain was relieved in a few minutes, and there was no vomiting; the castor-oil was given at the proper time, and it also had stayed on the stomach, and had operated twice easily. There had been no vomiting since. She feels better in every way, only extremely weak. Pulse 120. To continue the iced champagne, beef-tea, and milk, to observe perfect quiet, and to have a repetition of the morphia injection if either the pain or vomiting should return.

Sept. 30th. Still improving; the pain has ceased almost entirely, and there has been no vomiting. To inject the morphia at bed-time to-night, as she said she did not last night sleep very well.

Oct. 1st. Going on well.

From this time she recovered slowly but steadily. The morphia after last report was injected twice at bed-time, and then it was omitted, and bromide of potassium given instead. She enjoyed good health up to the present time (May, 1869), never having had any return of the attacks. Now, however, she complains of cough, accompanied with slight hæmoptysis, and on examination tubercular deposit is easily detected at the apices of the lungs.

Now, as in the case first detailed, so in this, nothing could have been more marked than its extreme urgency, and the inefficacy of all the remedies prescribed; and nothing could have been more apparent than the immediate improvement after the injection of the morphia. The two most urgent symptoms, the pain and the vomiting, were almost instantaneously relieved, and the stomach was, as it were, compelled to tolerate the presence of the castor-oil until it passed into the bowels and produced its laxative effect.

Obstructed bowels, accompanied with intense pain and vomiting.—This case, which I shall describe shortly, was pretty much like that just detailed. I was called up at midnight on the 27th April, 1868, to go and see Mrs. B., aged 33, who was said to be dying, I went, and found her in a state of perfect collapse; no pulse could be felt at the wrist; the skin cold and pale. She complained of intense pain, which had come on suddenly, all over the belly, and she had vomited once. Bowels had not been opened for three days. Being six miles from any apothecary, and finding a phial of chlorodyne in the house, I gave her twenty-five drops in a little water, and ordered it to be repeated if vomited immediately, and in two hours if the pain should be unrelieved. I ordered, also, calomel and opium pills, which were to be given if necessary, when they were procured, one every four hours; an opium plaster to be spread over the belly, and a poultice over it; also, plenty of external warmth.

April 28th. Has rallied a good deal, but has vomited everything, and complains of the pain being severe, especially so in the hypogastric region. Pulse 115, pretty full; bowels have not been opened; urine scanty and high-coloured; tongue dry and glazed; great thirst; severe headache. I injected fifteen minims of the morphia solution over the part where the pain was complained of, and ordered a black draught to be given an hour after.

April 29th. The pain which was immediately relieved on the injecting of the morphia, has not returned and there has been no vomiting since the draught operated twice, bringing away copious offensive dejecta. Feels much better. Pulse has fallen to 72. Ordered the morphia to be injected again if the pain or vomiting should return.

May 1st. Has not required the morphia; feels pretty well, but weaker, and has no appetite. Has not slept well during the last two nights, and still complains of some headache. Ordered bromide of potassium and tincture of hops before dinner and at bed-time.

May 10th. Feels now quite well.

This case also showed symptoms of great severity, which were very speedily relieved by the hypodermic injection. During the past six years I have employed this method many hundred times, and almost always with the best results. The above cases show how valuable it is in angina pectoris, and in obstruction of the bowels, accompanied with severe abdominal pain and vomiting. And every day experience shows how good results can be obtained from its employment in rheumatism, both acute and chronic, lumbago, sciatica, insomnia, mania, melancholia, neuralgia, delirium tremens, threatened abortion, in various departments of midwifery, &c. The only remedies I have used hypodermically have been morphia, atropia, and caffeine. Atropia is a powerful and effective remedy in many cases, but not so safe nor so pleasant as morphia, which possesses nearly all the advantages of the other. I tried caffeine in one or two cases, but was disappointed in it. In one patient, suffering from insomnia, it produced intense sickness, and had no effect in relieving the sleeplessness. In another I gave it where much pain was complained of, without affording any marked relief. The dose I gave in both cases was one grain, as recommended by Dr. Anstie, in a paper published by him in the *Practitioner* for July, 1868.—*Medical Press and Circular, Dec.* 29, 1869, *p.* 509.

121.—NOTES ON APOMORPHIA.

By Dr. F. M. Pierce.

In the present communication, my object is to draw attention to the valuable properties possessed by apomorphia. By the kindness of my friend Mr. C. R. Wright, B. Sc., I was enabled, soon after the discovery of apomorphia by Messrs. Matthiessen and Wright, to make some investigations into its value in practical medicine. A detailed account of apomorphia will be found in the Proceedings of the Royal Society for 1869. It may suffice here to state that apomorphia is obtained by subjecting morphia to the continued action of pure hydrochloric acid at a high temperature for several hours. The base can be obtained from the resulting hydrochlorate of apomorphia, by dissolving in water, adding excess of bicarbonate of sodium, and extracting with ether or chloroform. In composition, apomorphia is morphia *minus* an atom of water. In its chemical reaction, it is in nearly all respects different from morphia. It is soluble in cold, and to a greater extent in warm, water. In powder, it is of snow-white colour. The watery solution is colourless at first, rapidly changing to a dark olive-green, and, at the end of a few weeks, almost black. The cause of this evident decomposition is at present *sub judice*. Morphia is not reproduced. The physiological effects of the coloured solution are the same, to a slightly diminished extent, as of the fresh preparation, but rather more irritating to the skin. An increase of the dose is, therefore, required on repetition.

Briefly to indicate its therapeutic value, the chief character of the drug—its power of producing vomiting—was noticed to a very disagreeable extent during its preparation. Its absorption through the cutaneous surface produced in the manipulators lassitude, weakness, frequent headache, constant nausea, and occasional sudden attacks of vomiting. From some experiments made by Dr. Gee, one-tenth of a grain was considered the average dose for an adult. I have found this too large, whether of a fresh or an old solution. The desired effect is readily obtained with one-fifteenth of a grain, or less; vomiting occurring in from five to twelve minutes, and the subsequent depression being slight and of short duration.

The solution which I have generally used consisted of a grain of hydrochlorate of apomorphia (the base being very unstable), dissolved in two hundred minims of water. Five minims of this preparation, or one-fortieth of a grain, was the dose generally administered to children, to whom I have frequently given it as an emetic. In nearly all the cases, it was administered subcutaneously. In private practice, the hypodermic use of drugs may appear a little formidable; but the more complete control of a drug thus acquired will probably in time outbalance the objections to this method.

In illustration of the action of apomorphia, I append one case.

W. B., aged 8, residing at Kingston-on-Thames, came under my notice suffering from well-marked chorea. He was an intelligent, well-made boy, of sanguine temperament, the youngest of three. His father died of some strumous affection. The mother works much at her needle; she is nervous, but healthy. The patient's symptoms followed a severe scald of the chest when 5 years of age. At first, he was simply considered fidgety. Four months before I saw him, he had rheumatic fever. The twitches had increased very much since. The parts most affected were the muscles of the face, especially of the mouth (he could not protrude the tongue readily, nor keep it still when protruded), the muscles of the neck, arms, and trunk. The legs were least affected. A slight systolic *bruit* was audible at the apex of the heart. He had no worms. Three days after I first saw him, I injected one-fortieth of a grain of hydrochlorate of apomorphia into the left arm. The pulse before the injection was 70, regular, weak; temperature and pupils normal. He did not complain of approaching nausea, but suddenly vomited at the expiration of six minutes and a half; and, fifteen minutes later, he again vomited. The pulse, nine minutes after the first vomit, was 100, weak; the temperature was not affected to any noteworthy extent. He felt a very slight drowsiness, lasting only a few minutes. He did not sleep, but returned to play. The involuntary movements were markedly better next day; they were less sudden, frequent, and complete. He could stand for two or three minutes almost quiet. At the end of three days, during which period his improvement was maintained, the fortieth of a grain of apomorphia was again injected. Previously to injection, the pulse was noted as being 76, irregular, weak; the temperature 98·9; the pupils normal. The muscles of the neck and left arm were still very much affected. Vomiting ensued, without premonitory symptoms, in fifteen minutes. The pulse was 88; the temperature-variation unimportant. The pupils were slightly dilated. He did not feel any sleepiness, and, after a few minutes' rest, felt quite well. The chorea was much diminished after this; and, ten days later, I injected one-thirty-third of a grain in the arm. The pulse was previously noted 80, regular; pupils normal; &c. Vomiting occurred suddenly at the end of ten minutes; the pulse counting 90; the pupils dilated a little. He was discharged quite recovered soon afterwards, not having had any choreic movements for the last eight or nine days. No other treatment was adopted.

In two other cases of chorea, the action of apomorphia was beneficial, though not as distinctly as in the above case, and indeed, not more so than many of the vaunted remedies for chorea. It does not seem to have any specific action. It is only as an emetic that I would draw attention to it. With this object, I have used it at the commencement of pneumonia; to relieve the throat of exudation in diphtheria; in scarlatina, &c.; in cases of poisoning; and in drunkenness. As an emetic, it is depressant, but not to a dangerous extent. Though, in the example given, slight drowsiness was observed on one occasion after its use, it has not been a constant accompaniment, but the exception. The feebler the preparation, the less was this noticed. In both adults and children, with a dose not exceeding one fifteenth of a grain, very slight inconvenience followed. The alterations of the temperature and respiration were so slight that they may be disregarded. The pulse was not peculiarly affected. The pupils were generally a little dilated. No action on the bowels or kidneys was observed.

Apomorphia is peculiar in the sudden accession of the vomit. The usual premonitory signs and symptoms are wanting, or all but coincident with the expulsive effort. The first attack of vomiting is sometimes succeeded by another, after a few minutes' interval, the patient quickly recovering from the temporary disturbance. Most frequently, the single vomit is short and final.

The occasional occurrence of sudden vomiting after the administration of morphia, subcutaneously or by mouth, may perhaps be due to the presence of this body—apomorphia—as a product of partial decomposition. Should further investigation complete the chain of chemical analysis and synthesis of the morphia salts, some very instructive chemical and physiological results may be obtained.

In conclusion: as an emetic, apomorphia is pre-eminent in the smallness of the dose required; the certainty, rapidity, and completeness of its action; the unimportance of its baneful effects; and its non-irritating character. It contrasts most favourably with the old-fashioned emetics. The only drawback at present is its costliness; but, no doubt, in a little time it will, as well as chloral, come within the reach of the most economical practitioner.—*British Medical Journal, Feb.* 26, 1870, *p.* 204.

122.—POISONING BY TINCTURE OF ACONITE SUCCESSFULLY TREATED BY HYPODERMIC INJECTIONS OF LIQUOR AMMONIÆ.

By B. Wills Richardson, Esq., Examiner in the Royal College of Surgeons, Ireland, and Surgeon to the Adelaide Hospital, Dublin.

[The treatment pursued in the following case was of course suggested by its successful employment in case of snake poisoning, as suggested by Professor Halford. We may remark that Professor Halford disapproves of merely throwing the injection under the skin, and recommends its being thrown directly into a vein. The liquor ammoniæ used in this case was not diluted, as it was not found to be a very strong preparation.]

On Thursday evening, Nov. 12, 1869, I received an urgent message to visit Miss B., aged 25 years, who, while suffering from severe facial neuralgia, swallowed through mistake, instead of a tonic mixture, two tablespoonfuls of an aconite mouth lotion.

The mixture and the lotion being upon the dressing-table, Miss B., in the hurry to get out for some shopping, swallowed, just after breakfast, two tablespoonfuls of the lotion, instead of an equivalent dose of the mixture, her mouth being at the time benumbed by previous use of lotion as such.

The mistake was made at 11 o'clock a.m. A cup of tea was next taken by her, and she left home in a few minutes. Several shops were visited on her way to the house where she intended to make most of her purchases, so that the latter was not reached until half-past twelve o'clock p.m. She had barely entered it when she became "alarmingly ill, staggered on attempting to walk, and was seized with a fearful benumbed tingling in the lower half of the back, then in the face and head, while at the same time the tingling in the mouth became more developed. The head felt as if it were distorted by the pressure of a vice, and a sensation of tightness across the nose and eyes was most distressing. In a few minutes more, the legs became so weak, and such tremor came over her, that she could not stand without assistance. She was conveyed immediately to the house of an acquaintance in the neighbourhood, her friends being under the impression that she was too prostrate for the drive home, a much longer distance. She was placed upon a sofa. The debility had become so great that she fainted on three or four occasions in attempting to sit up. Benumbed tingling of both the upper and lower extremities commenced at half-past one o'clock p.m., and vision became very imperfect, a blackness, as she described it, having come over the sight. A little time afterwards, vomiting of an olive yellow-coloured fluid commenced, and was almost incessant up to seven o'clock p.m. Towards evening she was greatly collapsed, and, having fainted when in this state, her friends fancied that she had expired."

Before I saw her she had been given brandy repeatedly, as well as acidulated drinks; but they were vomited as soon as they reached the stomach. Warm jars, also, were applied to the feet, and additional warm clothing was placed over her. There was no indication of mental aberration, and the bowels were undisturbed. I arrived at fifteen minutes to seven o'clock p.m. and found her in a most perilous state. The face was pallid, the pupils were largely dilated, and the extremities of icy coldness. Vomiting was almost constant, and loud eructations were frequent. She had, as she expressed herself, " a dreadful benumbed tingling in the legs, arms, head, face, and in the mouth, the head feeling as if it were compressed by a vice." The pulse was felt with difficulty at the wrists, and the heart's action was weak and irregular. I gave her immediately some warm brandy punch, and, in a few minutes afterwards, a mixture composed of aromatic spirit of ammonia, sulphuric ether, tincture of ginger, and camphor mixture. A sinapism was placed over the heart, and one upon the calf of each leg. The punch and the mixture were not retained upon the stomach.

She was pulseless at ten minutes to seven o'clock, and the extremities were cold as death. The pupils were much dilated. The intellect continued unimpaired.

It being obvious to my mind that death at the heart had commenced, I resolved to inject hypodermically twenty-five drops of liq. ammoniæ; but as the time that would be required to procure my own syringe might be a fatal loss to the patient, I sent to a neighbouring cutler, who was kind enough to send me one in a few minutes.

7 o'clock p.m.: I injected half a drachm of liq. ammoniæ under the skin, corresponding to the insertion of the right deltoid muscle.

7.10: Vomiting not so frequent; but the stomach will not tolerate the stimulants. She continues collapsed and very cold; forehead covered with sweat, eyes glassy, and pupils are much dilated; tongue pale and contracted; no trace of pulse at the wrists; intellect unimpaired. Injected half a drachm of liq. ammoniæ under the skin of the outside of the right arm, about midway between the elbow and seat of the first injection.

7.20: Vomiting at longer intervals; still pulseless at the wrists, and no sign of return of warmth in the extremities; complains constantly of the compressed and distorted feeling of the head; pupils have continued of the same size. Injected half a drachm of liq. ammoniæ under the skin of the left infrascapular region.

7.25: Pulseless. Injected half a drachm of liq. ammoniæ under the skin a little below the middle of the outer part of the left arm.

7.30: While my fingers were applied over the course of the radial artery, at the wrist, searching for a pulsation, I fancied I felt a weak, irregular, thready beating of the vessel. In a few minutes this became no longer doubtful, but gradually stronger and stronger.

8 o'clock: Pulse fully established, but a little irregular; vomiting has almost ceased; extremities warming; tingling of the skin and compressed

sensation of the head and face no longer felt. The tingling, however, of the extremities, although not so decided, did not cease until half-past twelve o'clock next morning; and that of the lower lip continued until November 28.

In cases in which death is to all appearance impending, I should not like to lose time in trying to limit the injection to the vein, as suggested by Professor Halford, and would rather take the chance of a sufficient quantity of the ammonia being absorbed from the areolar tissue before its local action takes place, the chief objection to this procedure. Of the four injections made under the skin in Miss B.'s case, but one caused subsequent annoyance, the cutaneous eschar that resulted from it being about the size of one of our new halfpennies. There being no doubt that the symptoms were caused by tincture of aconite, the important matter to ascertain was the quantity that had been taken. I therefore made the necessary inquiries on the point, and learned that the lotion, if made according to the directions for compounding it, should have contained one drachm and a half of the tincture in every fluid ounce. Of this lotion Miss B. took two tablespoonfuls, as already mentioned.

Whether or not the late appearance of the symptoms was owing to the tincture being a weak preparation, or to the fact that it had been taken immediately after breakfast, or even to some peculiar idiosyncrasy are matters for conjecture. At all events, when they were established, they were of the most alarming nature, and portended approaching death.

Although I am fully sensible of the wonderful assistance nature renders to our art, nevertheless I believe that if she had not been herself assisted in this case, she would have failed in maintaining life sufficiently long to allow the influence of the aconite to pass away.

When we consider that none of the stimulants given by the mouth were retained upon the stomach—that Miss B. was almost pulseless at a quarter to seven o'clock, and pulseless at ten minutes to seven o'clock, and continued to be so until about half-past seven o'clock—and that during these forty-five minutes she became weaker and weaker, colder and colder—the saving of her life may, I think, be fairly attributed to the ammonia subcutaneous injections, and for the following reasons:—1. The vomiting, which had been almost incessant, up to the moment of the first injection, commenced to lessen in frequency immediately after it, and nearly ceased after the fourth; 2. The disappearance of the pulse from the wrists at ten minutes to seven o'clock, and its reappearance after the fourth injection; 3. And because none of the stimulants that had been given by the mouth were retained by the stomach, any influence they may have exerted when descending to this viscus, and for the few moments they were in it, not being sufficient to prevent the progressive failure of the circulation.

In addition to the varieties of poisoning for which Professor Halford has recommended liq. ammoniæ injections, it appears to me well worthy of trial in poisoning by chloroform and in hydrophobia. Possibly, if life could be prolonged beyond the time that death usually occurs in the latter intractable malady, it might be averted. Whatever doubt may exist as to the necessity of venous injections in a case like the one I have just narrated, there can be little as to the advisability of injecting the veins in hydrophobia; for, as the injections would probably have to be frequently repeated, such a multiplication of the cutaneous eschars it would be better to avoid.—*Medical Times and Gazette, Dec.* 18, 1869, *p.* 709.

123.—CASE OF POISONING BY ATROPIA.

By Dr. Francis H. Parsons, Admiralty Surgeon, Barking.

A strong healthy man, aged 45, swallowed by mistake rather less than two drachms of solution of sulphate of atropia, which had been prescribed as an ophthalmic remedy for his son. He described the taste as like that of quinine; but thought nothing more about it until symptoms began to manifest *themselves.* When I was called to his assistance, he was perfectly conscious, and able to describe his symptoms clearly. He said that he thought he had accidentally swallowed some solution of caustic, which his son was using for his eyes. I therefore tested the three or four drops that remained in the bottle, with a little chloride of sodium, but, getting no precipitate, I began to suspect that he had taken atropia. An emetic of mustard and warm water was immediately administered, and followed, after a short time, by vomiting. The pupils now became dilated, and he complained of excessive dryness of the mouth and throat, with a sensation of burning and choking. He had great difficulty in swallowing, but the respiration was free, the pulse was 130. He complained of great dizziness, and a sensation of weight on the top of his head, and over his eyes. He had frequent rigors, and loss of muscular power, being unable to walk, or, as he expressed it, "to feel his legs," he became very restless and agitated; he had great difficulty in articulation, and micturition was only accomplished after some trouble.

The stomach having been thoroughly evacuated, by means of the stomach-pump, animal charcoal was administered to the extent of four ounces, and some solution of carbonate of ammonia was given at frequent intervals. After about two hours he became very drowsy, but was kept awake with strong coffee for eight hours; after which he slept soundly for some time. On the following morning, his pulse had fallen to 50, he still complained of dryness of the mouth and throat, and slight dizziness; the pupils were somewhat dilated, but he was able to read large print. A dose of castor-oil was ordered, and a continuance of the ammonia. He had quite recovered in forty-eight hours and was able to walk out on the third day. A peculiar effect was noticed by all his friends; his hair, which had been previously but slightly tinged with grey, had become almost white.—*British Medical Journal, Dec.* 25, 1869, *p.* 675.

124.—USE OF BELLADONNA IN CONSTIPATION.

By Dr. F. B. Nunneley.

[The remarks in the following paper on the medicinal treatment of constipation, by means of belladonna, are founded upon experience at the York Dispensary.]

The method followed was, in the main, that recommended by Trousseau. Extract of belladonna was given in doses of gr. $\frac{1}{6}$ to gr. $\frac{2}{3}$ on rising every morning. A grain of the extract and gr. iij. of the extract. gentianæ were divided into six pills, and one to four prescribed for a dose.

On analysing the cases of constipation, both recent and of long standing, it was found that the greater number were associated with dyspepsia, and especially with that form presented more or less the characters of gastric irritation, in which the tongue was thinly furred, with prominent red papillæ at the tip, and in which there was tenderness at the epigastrium, pain, especially after food, and often more or less headache. Patients with these symptoms presented themselves with a history of inactive bowels for several months or years, often stating that they were obliged to take aperient pills, senna, castor-oil, &c., once or twice a week to produce an evacuation. The ages of those patients varied from twenty to sixty years of age, the majority lying between twenty-six and fifty. To these belladonna was given for from one to three weeks. It nearly always caused an evacuation, usually of solid stools, after breakfast on the morning on which it had been taken. Generally the bowels continued regular after the belladonna was discontinued, and sometimes headache was greatly mitigated. In one case, the patient, a woman, aged 47, had had constipated bowels for twenty-six years, for which she had taken pills or castor-oil once a week. Belladonna restored the natural daily action in fourteen days. In a few cases no permanent cure was effected, but relief could be obtained by taking belladonna every second or third day, the dose had not to be augmented, and no increased constipation followed its use.

In more recent cases the natural action of the bowels was restored in a few days: thus a man had taken pills every other day for five weeks, but the bowels acted naturally after taking belladonna for six days.

Treatment was specially directed to the dyspepsia in all cases, but no aperient except belladonna was given, and frequently not this, until the effect of regulated diet and habits, and of general treatment, had been observed.

The remaining cases of constipation occurred in very various diseases. Most often belladonna acted as an ordinary aperient when given in the manner before stated, and its use had not to be continued more than from one to three weeks to cure the constipation. Rarely, it produced no effect even in doses gr. ½ to gr. j, except causing dryness of the throat: such a failure occurred in the third stage of phthisis.

Belladonna in the usual dose of gr. ⅙ to gr. ½ produced no dryness of the throat, or dilatation of the pupil, but presented the following advantages over ordinary purgatives:—It did not gripe but gave usually a healthy solid stool, increased constipation did not follow its use, and it very often restored the natural action of the bowels, so as to render a recurrence to this or other aperient unnecessary. Another and important advantage is the small bulk in which the remedy can be given.—*Practitioner, April*, 1870, *p.* 217.

125—ETHER AS A STIMULANT-SEDATIVE.

The experience of an eminent Judge.

[The following interesting facts were communicated to Sir James Alderson, the President of the College of Physicians, by Sir Frederick Pollock, late Chief Baron of the Exchequer, by whose desire they are published. Sir F. Pollock has reached the great age of 86, yet still retains his mental energy and activity.]

About six years ago, he was led to adopt ether-inhalation by the occurrence of symptoms which, though not dangerous, were annoying, and had a chronic depressing tendency. Besides a certain amount of indefinable nervous malaise, he suffered specifically from gastric flatulence and painful spasm, occurring almost constantly during meals. His attention was drawn to the possibility of getting relief from these inconveniences by taking some stimulant-narcotic, and he remarks, in one of his notes, that many elderly persons, who have lived intellectually laborious lives, have taken to the use of tobacco, or of opium, with a view to assuaging sleeplessness, and other nervous troubles which are very common at that period of life. Both tobacco and opium, however, disagree with Sir F. Pollock, or at least fail to produce the required effect. He therefore made experiments with the best rectified ether, which he inhaled from an ordinary bottle applied to one nostril; and it soon became apparent that a few whiffs, taken in this manner, were sufficient at once to quiet spasm and pain, and to induce a general tranquillity of the nervous system. It is needless to say that only very small quantities of ether can enter the blood in such inhalations as are now described, since not only does much escape at once into the air, but of that which is actually breathed a large proportion is simply expired again without being absorbed; and the smallness of the dose physiologically appropriated is sufficiently proved by the fact that true anæsthetic phenomena are never produced. At most, when several strong whiffs have been taken continuously, especially if the temperature of the ether has been raised by holding the bottle a long time in the hand, a dizziness has been produced—just enough to amount to slight vertigo when the standing posture has been attempted; but on careful inquiry it does not appear that this degree of etherisation is necessary for the relief of the uncomfortable sensations on account of which the practice was originally adopted. So far from consciousness being disturbed or clouded by the use of the ordinary small doses of the vapour, it would seem that the intellect is both tranquillized and fortified by them. They fail to produce the least numbness of peripheral sensory nerves. Nor do they at all *compel* sleep; although by removing nervous *irritability*, they evidently favour its occurrence when it would otherwise be *difficult to* procure.

The practice of ether inhalation, as above described, has been steadily continued by Sir F. Pollock up to the present time, and the general facts observable are the following:—Both his physical and mental health may be called magnificent, considering his advanced years. The pulse is regular and firm, of medium tension, and keeps very nearly to the standard of eighty; it does not appear to vary materially either during or after an inhalation. Not merely can gastric spasm and flatulence be relieved with the same instantaneous certainty as at first, but the tendency to such affections has evidently and notably diminished. Sleep is obtained, at intervals, to the amount of, perhaps, eleven hours out of the twenty-four, including a regular mid-day siesta. As is common in advanced age, not much solid food is taken; but a moderate amount of alcoholic liquids (brandy and sherry) are consumed, in small doses. The appetite for solids is visibly diminished when any considerable amount of ether has been inhaled shortly before a meal. There is not the smallest impairment of muscular co-ordination proper; and in regard to this it may be mentioned that the handwriting is singularly vigorous and perfect. So free are the muscles from tremor that till quite lately Sir Frederick could balance a full wine-glass on the backs of his closed fingers and lift it to his lips without spilling; and even now the hand can be held out for a long time without a visible shake. At present the inhalations are very frequently taken, and a variable quantity of ether, amounting sometimes to several ounces in a day, is used; but of course it is impossible to calculate how much of this enters the blood. We may conclude this detail of the facts observed by stating that a few extra whiffs, of exceptional vigour, produce slight flushing of the face, and a feeling of fulness in the nasal mucous membrane.

[There are social reasons which make it desirable to search for a better stimulant wherewith to soothe the nervous system of the aged than either alcohol, tobacco, or opium. We confess to a prejudice in favour of some agent which should be inhaled rather than one which should be drunk; but the number of substances which could be safely inhaled without the presence of a medical man is very limited. Neither chloroform, nor any of its substitutes except ether, would be reasonably safe. The latter drug, however, inhaled in the manner described by Sir F. Pollock, is free from all danger of life, and can very easily be kept down to the production of its purely stimulant effects. We have not personally had much experience of the inhalation of these very small doses of ether; but we have very often experimented on ourselves with small quantities taken by the stomach, and can report that the effect of these upon the nervous system is not in the slightest degree depressing, but tranquillizes only by stimulating and thus steadying the nerves. There is no temptation to take ether by the mouth, however, as it is disgustingly nasty; and this is a real advantage. Nor is it likely to be taken in any large excess by the kind of inhalation above described, as its smell is only tolerable, and by no means attractive. Without, then, expressing any positive opinion on the matter, it appears decidedly worth inquiring whether ether inhalation might not be advantageously recommended to a large class of aged persons who would scarcely call themselves patients at all, but to whom "the grasshopper is a burden" from the irritable state of their decaying nervous systems. It used to be a maxim of medicine, that the physician is as much bound to promote the euthanasia of the sick when they *must* die, as he is to save their lives if that be possible. And surely the phrase euthanasia may be reasonably enlarged so as to include not merely the management of the illness which actually cuts off an aged person at last, but the solace of months or years of a continuous decay which is the visible precursor of death. Ed. *Pract.*]—*Practitioner*, *Dec.* 1869, *p.* 357.

126.—A NEW SUBCUTANEOUS ASPIRATOR.

An instrument, to which the foregoing name has been given, has been presented to the Imperial Academy of Medicine, Paris, at its meeting of the 2nd inst. Its inventor, Dr. Dieulafoy, communicated at the same time the following note as to the objects which the instrument is intended to serve:—

"The Subcutaneous Aspirator appears to me to fulfil two principal conditions: firstly, as a means of diagnosis; secondly, for treatment. We know how difficult it is to recognise sometimes the presence of a purulent depot concealed under muscles or aponeuroses in the centre of such regions as the neck or iliac fossæ, or situated deep in such organs as the liver or kidney. The observer is necessarily undecided as to the presence and nature of the fluid, which does not for some time declare itself either by swelling or fluctuation. It was for the purpose of elucidating these doubts that the exploring trocar has been devised. But that instrument carries with it its own condemnation, being, at the same time, too large and too small. Its size is considerable compared with that of the fine needle used for subcutaneous injection; yet, in spite of its considerable diameter, it hinders frequently the escape of liquids if they be at all dense.

"To remedy these difficulties I have constructed long canulæ so fine that the most delicate organs may be traversed by them without being injured more than by acupuncture needles. This trocar is introduced in search of the supposed liquid, a vacuum is easily produced with the piston, and the operator is at once informed of the presence, seat, and nature of the collection. This means of exploration is specially applicable to cysts, and all serous, hemorrhagic, purulent, or urinary collections.

"As a means of treatment the aspirator serves many purposes. It will evacuate an articular abscess without the introduction of a single bubble of air, and with an opening so small as to be incapable of producing any ill result. Would not analogous treatment be applicable to pericardial effusions? Would it not be available for removal of urine in case of retention of liquid in encysted pleuritis and in congestive abscesses.

"The evacuation of the fluid may be rendered continuous by means of the double stopcock, and if an injection—tincture of iodine or alcohol—is necessary, it may be made at the same sitting, and without displacing the instrument.

"The use of the instrument has been also suggested for the removal of the gases which accumulate in intestinal obstructions, and which greatly impede the return of a hernia."

One detail of construction is strongly insisted on by the inventor. When the stopcocks have been closed, and a vacuum has been created by the withdrawing of the piston, it may be locked at the top of its course by a slight turn to the right. Thus, the needle having been first introduced, it will be sufficient to attach the aspirator and open the cock, when the liquid will at once rush into the barrel of the syringe without the least movement on the part of the operator.

The instrument is manufactured by Messrs. Robert and Collin, of Paris.—*Medical Press and Circular*, *Dec.* 1, 1869, *p.* 437.

127.—ON EXCISION OF THE KNEE.

By Dr. G. M. HUMPHRY, Professor of Anatomy, and Surgeon to Addenbrooke's Hospital, Cambridge.

[Dr. Humphry has performed this operation thirty-nine times. Twenty-eight recovered, two died, nine underwent amputation: of these five recovered and four died. The limb is, of course, slightly shortened, but this is no disadvantage, as it facilitates the *swing* of the limb forwards in walking.]

In the majority of the cases the disease in consequence of which the operation was performed had commenced in the synovial membrane, and had made its way slowly through the cartilages, more or less deeply, into the bones, so as to leave little or no prospect of a useful joint or of the limb being preserved.

In some the disease had passed away and sinuses resulting from an ulcerated state of the bones had healed, but the joint was contracted and the articular surfaces were distorted beyond the hope of benefit from extension and mechanical appliance. In these two classes of cases, and in some others, excision offers the prospect of a very useful limb, a better prospect, so far as my experience goes, than does any other procedure, and it does so with little risk. I say with little risk, because the operation, though extensive, is, as in the case of other operations in which osseous structures are chiefly concerned, not usually followed by much constitutional disturbance. No large vessels or nerves, and not much muscular tissue, are involved. The chief danger to be feared is a continuance of suppuration, undermining the health and rendering amputation necessary. This may probably be lessened by improved treatment after the operation. It is most likely to occur in patients of strumous temperament. In such persons, as mentioned in my former paper, disease lingers long in the synovial membrane, causing thickening and other changes in it, and tedious suppuration is not unlikely to follow excision. This was the most frequent cause of failure in my cases.

The operation of excision of the knee recommends itself, therefore, partly at least, on the following grounds. When disease has proceeded to such an extent as seriously to alter or destroy the synovial, cartilaginous, or osseous structures of the joint (which, be it observed, commonly may, and in the upper class of society usually is, prevented by early attention and rest), it is almost in vain to expect that a useful joint can be restored, by which I mean a joint with useful movement and able to bear the weight of the body well. Indeed, the limited movement which remains is, commonly, worse than useless; it is mischievous, by entailing weakness, with liability to return of disease, and permitting contraction to ensue. The best result that can take place in such a case is the complete abolition of the joint with anchylosis of the bones. Even if the limb be bent or otherwise distorted, it is more likely to be useful when anchylosed than if movement continued. Unfortunately, as we know, this result does not very often take place at the knee. As the disease subsides the articular surfaces become united, and that, perhaps, in parts only, by a soft fibrous medium, which permits some movement, and has little disposition to ossification even under the long-continued favourable condition of perfect rest. In most of the limbs rendered crippled, useless, and wasted by disease of the knee, some movement of the joint remains, insufficient for any useful purpose, but enough to disable the limb from bearing weight; and mechanical supplements, even if they answer their purpose, are by most persons unattainable. By excision this difficulty is overcome, the remaining portions of the joint, which serve only to render the limb useless, are removed, and anchylosis of the bones is effected. In short, we bring about by the operation that condition which we would gladly see attained without such interference.

I usually commence the operation by a semilunar incision, with the convexity downwards in front of the knee, then reflect the skin a little, cut into the joint, remove the patella and as much of the diseased synovial membrane as I can, expose the articular surfaces, and saw off the diseased parts.

It is sometimes necessary to saw off a second or a third slice, or to gouge out ulcerated or diseased portions; and it is better to apply the saw two or three times than to remove recklessly large portions at first, though this may have the trifling advantage of expediting the procedure. I do not reflect the circaperiosteal tissues close, but prefer to saw them off with the bones, so as to leave the latter well covered at their edges, and therefore less liable to ulcerate. It is also very important so to saw the bones that when the cut surfaces of the tibia and femur are placed in contact they fit well to each other, the line of the limb being straight, *i. e.*, not bent, or with the leg inclined to either side.

I am very careful to sponge the wound well and secure the bleeding vessels, so as to prevent hemorrhage taking place after the patient is placed in bed, for the collection of blood in the wound prevents early union and entails suppuration. Ligatures should, if possible, be avoided, and torsion used instead, so that no foreign body is left in the wound.

Having taken these precautions and placed the cut surfaces of the bones in as complete apposition as possible, I bandage the limb along its whole length, except in the line of the wound, upon a splint placed behind and provided with a foot-piece. I then unite the edges of the wound by sutures and apply long splints on the sides, with pads placed above and below the knee, so as to defend the operated part from undue pressure, and to permit discharge to escape in the event of suppuration taking place. The limb is thus firmly secured in its whole length, except at the wound, which is left exposed. The bandages are moistened with blood, which sets and affords additional security. I am very particular to adjust things well and firmly in the first instance, and am very unwilling to disturb the limb afterwards. Indeed, I frequently do not remove any of the bandages or splints for five, six, or more weeks; and by this care and perfect quiet I endeavour to promote immediate union, which not uncommonly takes place throughout the entire wound. If this fails to take place and suppuration ensues, I still do not remove or change the bandages and splints, unless there is some unusual reason for doing so, but allow the discharge to escape at the sides and adopt various means to maintain cleanliness. This perfect quietude and abstinence from removal of the bandages first applied is, I consider, a very important item in the treatment. It is equally important not to discontinue the splints till the bones are quite firmly united, till the patient can raise the limb from the bed by its own muscles, without any movement being perceptible between the tibia and femur. It is necessary to make quite sure of this. For that purpose I watch closely when the effort to raise the limb from the bed is first made, because any slight movement is then most easily detected; and if the patient is allowed to get up while movement, however slight, takes place between the bones, the part is liable to become bent, or the process of anchylosis may be suspended, and the good result is thus marred. This flexure, as already stated, took place in some of my cases. It, as well as failure of firm union between the bones, has occurred in the practice of others; but they may be always, or generally, avoided by attention to the directions I have given.

The cancellous parts of bones, whether broken or cut, commonly unite well and quickly, and the opposed surfaces of the tibia and femur, after excision of the knee, form no exception to this rule. I have often been surprised at the rapidity with which the wound healed and the bones grew together.

When suppuration takes place and continues, careful management is required, for which it is impossible to lay down rules. Much judgment also is needed in deciding on the propriety of laying open sinuses and exposing or removing carious bone, and still more in determining the period beyond which it is unsafe to defer the removal of the limb. The result proved in some of my cases that I had delayed this too long; and in others the examination of the part after amputation indicated that, with additional patience and well-directed incisions, the limb might have been spared.

Excision of the knee is an operation requiring care in the execution, and care and patience in the subsequent management, but it is not an operation of much danger, and by it, I am sure, many an amputation might be avoided, and many crippled, worse than useless, limbs, such as we daily see carried about our streets, might be rendered good helpmates to their fellows.

[Dr. Humphry has since performed the operation six times; five have recovered, and one is under treatment. This makes the number of operations forty-five, recoveries thirty-three.]—*Medico-Chirurgical Transactions*, *Vol.* lii., 1869, *p.* 15.

128.—HOSPITALS.

By the late Thomas Nunneley, Esq., Surgeon to the Leeds General Infirmary.

My beau ideal of an hospital is the combination of large, cheerful wards, having plenty of air and light, with enough space for exercise, in which chronic and convalescent cases, minor injuries, operations, and diseases may be advantageously placed; with a sufficiency of small and different sized wards, capable of accommodating from one to six or eight patients. In these I would place every serious injury, capital operation, or acute disease, and more especially all offensive and contagious affections, which, as now usually *put in the large* wards, are, I believe, not only disgusting to the other inmates, but the not unfrequent cause of "hospitalism" and death to them. To place a sufferer from a large scald or burn, an old stinking ulcer, a gangrenous wound, cellular erysipelas, with large fetid sloughs and suppuration, cases of incontinence of urine or fæces, and such-like affections, as has now to be done in the Leeds and some other new hospitals, is, in my opinion, contrary to all propriety, and so injurious as to seriously militate against the philanthropic object for which such enormous outlay has been made—varying from at least £400 in the Leeds Infirmary, to considerably more in others, for each bed occupied.—*Lancet*, *Feb.* 12, 1870, *p.* 227.

129.—THE MORTALITY OF LIMB-AMPUTATIONS AS REGULATED BY THE SIZE OF HOSPITALS, AND THE DEGREE IN WHICH PATIENTS ARE AGGREGATED OR ISOLATED.

By the late Sir J. Y. Simpson, Bart.

In the two previous parts of these communications on Hospitalism we have seen that in our large metropolitan hospitals about 41 in every 100 operated on die of those patients who are subjected to the four major amputations of the limbs; while in single or isolated rooms in country practice patients die, under the very same class of operations, to the extent only of 10 or 11 in every 100. In the last chapter we have collected evidence of the death-rate from these same four major limb-amputations in British provincial hospitals of various sizes. If we throw the whole facts thus collected into a tabulated form, the general results may be stated as follows:—

Size of Hospital.	*Death-rate.*
1st Series.—In large and metropolitan British hospitals, chiefly containing from 300 to 500 beds or upwards, out of 2089 limb-amputations 855 died, or................................	1 in 2·4
2nd Series.—In provincial hospitals containing from 201 to 300 beds, out of 808 limb-amputations 228 died, or.............	1 in 3·5
3rd Series.—In provincial hospitals containing from 101 to 200 beds, out of 1370 limb-amputations 301 died, or...........	1 in 4·4
4th Series.—In provincial hospitals containing from 26 to 100 beds, out of 761 limb-amputations 134 died, or.................	1 in 5·6
5th Series.—In provincial hospitals containing 25 beds, or under, out of 143 limb-amputations 20 died, or.....................	1 in 7·1
6th Series.—In British private country practice, with the patients operated on in single or isolated rooms, out of 2098 limb-amputations 226 died, or..................................	1 in 9·2

These data go to point out and establish the general fact or general law in hospital hygiene, that the death-rate accompanying amputations of the limbs,—and, as we may infer, the death-rate accompanying other surgical operations, and many medical diseases also,—is regulated in a great and marked manner by the size of the hospitals, and the degree of aggregation or segregation in which the patients are treated. But like all other general laws in medicine, this law is subject to many exceptions. Thus, a small hospital, if overcrowded with beds and patients, becomes as insalubrious as a large hospital under one roof. On the other hand, a large hospital would be generally made almost as salubrious as a small institution, provided few beds were left scattered over its wards, and these wards were well ventilated and often changed. But such exceptions only establish more securely the great and important hygienic law, that, in the treatment of the sick, there is ever danger in their aggregation, and safety only in their segregation; and that our hospitals should be constructed so as to avoid as far as possible the former, and secure as far as possible the latter condition.—*Edinburgh Medical Journal*, *Dec.*, 1869, *p.* 532.

130.—THE CASE OF THE LATE MR. JUSTICE HAYES.

By Dr. George Johnson.

[This case is published by Dr. Johnson at the request of a near relative of the patient, in the hope that it may lead to some improvement in the ventilation of the Court in which he sat as Judge. Mr. Justice Hayes left his home in the country in his usual good health on Friday morning, Nov. 19th.]

He sat all day in the Bail Court at Westminster, and it was observed that during the day he appeared unusually fatigued and, as it seemed, excited. After the rising of the Court he transacted some business in the Judge's private room, when, just as he was about to leave the chamber, he became suddenly faint, sick, and paralytic. I saw him at half-past six, in consultation with my friend, Mr. Bond, of Parliament-street, who had been called in immediately after the seizure. The Judge was then quite conscious, but completely paralysed on the left side, both eyes being turned to the right. There was frequent vomiting, and so much prostration that it was some hours before we ventured to remove him to the Westminster Palace Hotel. There was a temporary rally, but subsequently increased drowsiness deepened into coma, and he died on the evening of the fifth day after the attack. All the circumstances of the seizure, and the subsequent progress of the symptoms indicated a copious hemorrhage into the brain.

One of the first remarks that the Judge made to me was that he had never felt better than when he left home in the morning; but he said, "I have been breathing all day the pestiferous atmosphere of the Court."

That breathing a close and impure atmosphere may be the immediate exciting cause of cerebral hemorrhage is certain. The blood, imperfectly aërated, and charged with the exhalations from numerous lungs breathing the same atmosphere, is impeded in its passage through the minute arteries, whose muscular walls contract and hinder its progress. Hence the sense of fulness, pain, and throbbing in the head, while the heart beats with increased force to overcome the impediment, and to drive on the blood. If heart and blood-vessels are sound and strong, the inconvenience is only temporary, and fresh air acts as a quick restorative. If the heart is weak, faintness may result from a defective circulation through the brain; and, on the other hand, if the arteries which supply the brain have weak and brittle walls, the increased strain to which they are subjected while the heart is beating with unusual energy to force the blood through the minute arteries which dispute its passage, may result in the rupture of a vessel, and consequent hemorrhage into the brain. That this happened in the case of Mr. Justice Hayes is certain, and that the exciting cause was "the pestiferous atmosphere of the Court" is highly probable.—*Lancet*, *Dec.* 11, 1869, *p.* 824.

SYNOPSIS,

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THIS VOLUME, SHOWING AT A GLANCE THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE HALF-YEAR. (ARRANGED ALPHABETICALLY.)

AFFECTIONS OF THE SYSTEM GENERALLY.

Acute Rheumatism.—There is no evidence to show conclusively that alkalies, lemon juice, or blisters curtail the duration of rheumatic fever. The blister treatment of Dr. Davies appears to very much relieve the acute symptoms, and the sufferings of the patient, but it does not actually shorten the duration of the case. The cases treated by us on the expectant plan recovered as favourably as under the treatment by drugs, and were as free from heart disease, if free from it when admitted into the hospital. (Drs. Gull and Sutton, p. 31.)

Perchloride of Iron.—The author states that he has found considerable benefit from the tincture of perchloride of iron in the treatment of acute rheumatism. He gives about thirty minims of the tincture every six hours. He has found the relief of the joint affection "definite, uniform, and speedy." This mode of treatment was suggested to him by its use in spreading inflammatory affections, as erysipelas. (Dr. J. R. Reynolds, p. 36.)

Apoplexy.—There can be no doubt that breathing a close and impure atmosphere may be the immediate and exciting cause of cerebral hemorrhage. The blood imperfectly aerated is impeded in its passage through the minute arteries and capillaries, whose walls contract and hinder its progress. The heart then beats with increased force to overcome the obstruction, and produces the sense of fullness, pain, and throbbing in the head. It is but one step then to apoplexy, and that step is readily taken if the vessels are at all brittle or weak. (Dr. G. Johnson, p. 272.)

Enteric Fever.—Enteric fever is a specific fever, and must therefore depend upon the presence of a specific poison. No simple contamination of drinking water with drainage matter will produce the disease, unless that drainage matter is contaminated with the dejecta of fever patients. This is abundantly proved by careful investigation of isolated epidemics. (Dr. T. C. Allbutt, p. 19.)

Rheumatism.—Rheumatism has a singular and inexplicable connection with the urethra. It is produced by the passage of sounds and lithotriptic instruments, as well as by the application of foreign matters. Urethral inflammation only is requisite to excite rheumatism in those who are hereditarily disposed to it. In gonorrhœal rheumatism, arrest of the discharge is often the readiest cure for it, though at other times it seems to follow the arrest of the discharge. (Mr. Acton, Dr. J. M. Fothergill, p. 39.)

Scarlatina.—The reports of the Medical Officer to the Privy Council prove beyond doubt that no sanitary arrangements have any effect whatever in preventing the spread of epidemics of scarlet fever. In twenty-four towns, many of which are under very different sanitary conditions of air, water, and drainage, there is shown to be no relation whatever between the amount of fatal scarlatina and the sanitary state of the town. (Dr. W. Fergus, p. 25.)

Typhoid Fever.—*Belladonna.*—The poison of typhoid is completely counteracted by belladonna. It changes the whole character and outward manifestation of the disease. Delirium, coma, subsultus, quickly vanish, and calmness of mind and natural sleep return. If the patient is an adult and the fever is well developed, twenty or twenty-five drops of the officinal tincture may be given every four hours. This dose must of course vary to suit individual ages and constitutions. The most remarkable effect is the suddenness with which the patient recovers his intellectual faculties, and the full power and control of his muscles. The administration of the drug should be continued in most cases about two weeks, or until the case has lasted about twenty-one days. There is no observable bad effect from this plan of treatment beyond occasional slight dryness of the fauces. (Dr. B. Kelly, p. 22.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Chorea.—*Chloral.*—A severe case of chorea is related, in which the hydrate of chloral proved of great service, by procuring sleep, and so renovating the powers of life, exhausted by the constant spasmodic movements and want of rest. (Dr. J. Russell, p. 50.)

Delirium Tremens.—*A Possible Cause of.*—The alcohol in ordinary use (ethylic) is not the only form of alcohol found in nature. There are various heavier forms of alcohol containing more carbon. These heavier kinds of spirit are largely distributed for consumption, especially amongst the lower orders, and are possibly the cause of delirium tremens, as they probably are the cause of that continued coldness, lassitude, and depression which follow the well-known dinner with "bad wine." (Dr. B. W. Richardson, Medical Times and Gazette, Dec. 18, 1869, p. 706.)

Epilepsy.—*Injection of Morphia.*—In the spanæmic condition of brain found in epileptics, morphia injected subcutaneously acts like a charm, subduing the pain of epileptic neuralgia, and sometimes postponing, if not preventing, a convulsive seizure. (Dr. E. T. Wilson, p. 257.)

Hemiparaplegia.—Injury of the lateral half of the spinal cord in the dorsal region, above the dorso-lumbar enlargement produces paralysis of the lower limb on the same side as the injury, but the anæsthesia on the opposite side to the injury. On the paralysed side there will be hyperæsthesia to touch, to pain, to tickling, and to heat and cold. There will be elevation of temperature at first on the paralysed side. (Dr. C. E. Brown-Sequard, p. 43.)

Insanity.—*Chloral.*—Chloral is decidedly the most valuable means of producing sleep which has yet been introduced into the Pharmacopœia of the Asylum physician. The only difficulty is to ascertain the exact dose for each case; but this is obviated by beginning with half-drachm doses, and increasing them by ten grains, until the limit is found. (Dr. J. B. Tuke, p. 51.)

Chloral in Acute Mania.—A case of acute mania is related in which there had been no sleep for five weeks, except for five minutes at a time, and in which opiates aggravated the disease. Twenty-five grains of chloral in two ounces of water, given at bed-time for three consecutive nights, produced marvellous effects. The second and third nights she slept nine hours. On the third day she was nearly well, and the pulse, which had been up to 130, had fallen to 90. There was no nausea, headache, or any other unpleasant effect produced. (Dr. G. Crawford, p. 54.)

Pain.—*Is it Rheumatic or Neuralgic?*—When the saliva is found decidedly acid in reaction, especially during digestion, the presence of an acid in excess may be at once inferred, and relief will be afforded by alkalies. When the reaction is not acid, the complaint is essentially neuralgic and not rheumatic. (Dr. J. M. Fothergill, p. 40.)

Paralysis.—*Diagnostic Use of Electricity.*—Electricity is of the following use in the diagnosis of the seat of disease in cases of paralysis. If you find the muscles of a paralysed limb, say the leg, respond readily to electricity, the nerve connection of the limb with the spinal cord must be perfect, and the portion of cord with which it is connected must be in a healthy state. The cause of the paralysis is seated higher up in the spinal cord or in the brain. Supposing, however, there is a diminution in the contractility of the muscles of the limb, or they do not respond to the stimulus at all, the cause of the paralysis must be either disease of the cord at the part from which arises the nerves of the paralysed limb, or there is some division of the nerve between the cord and the muscles (traumatic paralysis). (Dr. J. R. Reynolds, p. 54.)

Electricity is of the greatest value in the diagnosis of paralysis, whether real or not in cases of *railway accident*. A case occurred in which a man was paralysed in the arm and leg of one side, and it was thought by his own medical men that the loss of power was in a great measure ideal. On applying a strong electric current, however, to the muscles, little or no contraction resulted, although on the other side acute pain and powerful contraction were caused. It would have been impossible for the patient to sham this. (Dr. J. R. Reynolds, p. 56.)

SCIATICA.—*Hypodermic Injection of Morphia.*—Although other remedies may do more or less benefit to the patient in cases of sciatica, none will effect a cure and remove the pain except the salts of morphia, administered hypodermically. In recent cases a permanent cure is rapidly effected. (Dr. H. Lawson, p. 44.)

TETANUS.—*Chloral.*—A case of acute traumatic tetanus has been treated very successfully, with chloral, at the Lariboisière Hospital, Paris. From one drachm and a half to three drachms were given daily with the effect of relieving the pain completely, and the spasms almost entirely. No derangement of the stomach was produced. (M. Verneuil, p. 50.)

Calabar Bean.—A very full and free administration of Calabar bean is perfectly safe if the patient be well and carefully watched, so that the drug be given really as often and as much as the patient requires at the time. The drug is a direct counteractant of the disease. The relaxation of the muscles produced enables the patient to swallow food, and therein consists its superiority to all other relevants, such as chloroform and chloral, for instance, which prevent the taking of food. Two grains of the alcoholic extract about every half hour or hour is an average dose during the height of the disease. If the paroxysms, however, become unusually severe, the same dose may be given every quarter of an hour for three or four times, till relaxation is produced, which will rarely fail to be effected. (Dr. E. Watson, p. 45.)

Subcutaneous Injection of Calabar Bean.—A case is related in which the antagonistic action of Calabar bean to tetanus is remarkably well illustrated. The extract was given by subcutaneous injection. At one period of the case as much as forty-one grains were given in twenty-four hours. After each dose the relief to the trismus and opisthotonos was speedy and complete; comfortable decubitus, and a feeling of drowsy ease taking the place of arched back, tense abdomen, quivering limbs, and anxious countenance. (Dr. W. Haining, p. 47.)

Nitrite of Amyle.—The author relates a case of tetanus in which great benefit was derived from the inhalation of nitrite of amyle. The spasms were entirely held in check for the nine days during which the disease was at its height. Five drops were given at a time, on a handkerchief, every time the spasm re-appeared. (Mr. M. Foster, p. 49.)

AFFECTIONS OF THE CIRCULATORY SYSTEM.

ANEURISM.—*Compression by a Weight in Cases of Popliteal Aneurism.*—Compression by a weight is a better means of arresting the current through the femoral artery than either ligature or pressure by a tourniquet. It is superior to the first inasmuch as any part of the artery can be compressed, whereas when the ligature is used we are confined to one spot. The avoidance of a wound is of course the principal advantage. The weight should be about twelve pounds of shot contained in a long bag, and having a lower end of solid lead the shape and size of the larger end of an egg. No pain is caused by this plan of treatment. The mode of application will be understood at once by reference to the woodcut at p. 121. (Dr. P. H. Watson, p. 119.)

HEART OR AORTIC DISEASE.—*Subcutaneous Injection of Morphia.*—Do not fear injecting morphia subcutaneously in distressing cases of heart and aortic disease. It may be used without fear, and the relief afforded to the sleeplessness and tumultuous action of the heart will be often surprising to the medical attendant as well as the patient. No matter how swollen the limbs, no matter how agitated the pulse, even up to the time of the dying agonies, the same relief will be given. It is well to commence with an eighth or a sixth of a grain, but in ordinary cases a fourth of a grain will be found the proper dose afterwards. This should generally be given in the evening, and the room kept quiet afterwards, to favour the narcotic action of the drug. It is generally as well to examine the urine—for if albumen is found it is better not to give the morphia. The presence, however, of a small amount of albumen, not indicative of renal degeneration or of a great amount of secondary renal congestion, need not contraindicate its use. (Dr. T. C. Allbutt, p. 61.)

TORSION OF ARTERIES.—The author has made many interesting experiments upon torsion of arteries. After the ends had been twisted, the arteries were filled with vermillion-coloured wax injection, and sections subsequently made. In the majority of cases it was found that the hemorrhage is arrested simply by the inner coat being divided, and curving inwards, forming complete valves, not unlike the semilunar valves of the heart. This is the most perfect mode of closure, and to procure it the artery must not be too much twisted, and twisting of the end completely off is to be avoided. Four or five turns are generally quite sufficient for the purpose wanted. In some cases the inner coat does not incurve, but breaks up more or less into shreds, the blood coagulates amongst these, and the artery becomes firmly closed, but the support of the external coat is necessary. The more the end of a large artery is twisted, the more is the inner coat broken up, and the greater is the danger of disturbing its valvular incurvation. (Mr. T. Byrant, p. 112.)

VARICOSE VEINS.—*Obliteration.*—The division of veins on account of varicosity, if unaccompanied with some measure whereby the divided ends are effectually occluded, is a proceeding attended with great danger. Two needles should be passed under the vein to be divided, and slight pressure made on the vessel by means of ligatures passed over the ends of the needles. The vein may be now divided subcutaneously between the needles with perfect safety. By about the fourth day all symptoms of irritation will have subsided and the needles may be removed. This simple plan of treatment is very effective in the cure of varicocele. (Mr. H. Lee, p. 122.)

WEBBER'S ANTI-LIGATURE FORCEPS.—The forceps are intended to produce the same effect on arteries as the gnawing by the teeth of animals does in the division of the umbilical cord. So complete is the dovetailing and closure of the divided end of the artery that hemorrhage is effectually prevented even in large vessels. (Mr. Webber, p. 115.)

AFFECTIONS OF THE RESPIRATORY SYSTEM.

ARTIFICIAL RESPIRATION.—*New Instrument for carrying on.*—Dr. Richardson has had constructed a portable and handy form of bellows for producing artificial respiration. It consists simply of two india-rubber hand-bellows, each containing about four cubic inches of air, and terminating by two tubes in one common nozzle. The valves are so arranged that one is exhausting and the other supplying. The nozzle is introduced into the nostril of the patient and the two bellows compressed together at regular intervals, with the effect of forcing air into the lung during their compression and withdrawing air from the lung during their expansion. When the nozzle of the bellows is first introduced into the nostril, it is well, by two or three strokes of that side of the bellows which empties the lungs, to withdraw all the used-up air possible. It is also a point of importance to introduce the fresh air into the lungs very gently at first. (Dr. B. W. Richardson, p. 74.)

Induction of Artificial Respiration by means of Electricity.—Provided an efficient battery is used, such as that made by Dr. Stöhrer, of Dresden, artificial respiration can be easily produced by electric stimulation to the phrenic nerve. The rheophores should be sufficiently large to cover the whole width of the region traversed by the phrenic nerve. Stöhrer's batteries are very durable—give hardly any trouble, and are always ready for use on an emergency. When not in use the vessel containing the acid is lowered, and all chemical action ceases. (Ed. of Lancet, p. 77.)

Clergyman's Aphonia.—These cases depend upon muscular fatigue or weakness. The patient begins to speak in a clear and loud voice, and he continues to do so for a variable time, after which the voice becomes feeble, and it may soon be reduced to a whisper. At the same time there is a feeling of fatigue, and sometimes positive pain in the throat. With the laryngoscope we find no trace of structural change, or only slight congestion and redness, without swelling. This form of aphonia usually arises from overwork of the larynx, from speaking or reading in large churches. In most instances it has followed upon an inflammatory attack. The best plan of treatment is rest for the larynx as the organ of speech, change of air and scene, and a general tonic regimen. The daily application to the larynx of a saturated solution of tannin in glycerine often does good. Galvanism is of no use. (Dr. G. Johnson, p. 64.)

Croup.—*Morbid Anatomy of.*—Two distinct diseases are confounded under the name of croup. 1. Acute catarrhal laryngitis, in which there is nothing more than congestion and swelling of the mucous membrane of the larynx, with mucous or puriform exudation on the surface. 2. Diphtheritic croup, attended with the formation of a false membrane independently of the age of the patient or the severity of the inflammation, but simply on account of the specific character of the disease. (Dr. G. Johnson, p. 66.)

Local Treatment by Lactic Acid.—Lactic acid is a solvent of fibrinous exudations, such as that of croup. This property may be made of use in the treatment of that disease. The patient must be made to inhale a solution of lactic acid (fifteen to twenty drops in half an ounce of water) in the form of spray, at first every half hour, and afterwards when the respiration improves less frequently. (M. A. Weber, p. 68.)

Hooping Cough.—*Hydrate of Chloral.*—In children about six years old five grains of hydrate of chloral given three times daily, in a little syrup and water, will usually mitigate the severity of the paroxysms. Six grains, given only at bed-time, will in most cases ensure a comparatively quiet night. (Mr. A. M. Adams, p. 69.)

AFFECTIONS OF THE DIGESTIVE SYSTEM.

Chronic Constipation.—Minute doses of watery extract of aloes (gr. j.), combined in a pill with sulphate of iron (gr. ij.), and taken three times a day after the principal meals—if combined with regulation of the diet and constitutional exercise, afford a means not only of relieving, but of curing, habitual constipation. Nothing approaching to purgation ought to be permitted. Gradually it will be found that less and less of the medicine is required, until, after the lapse of some months, only one pill occasionally is required for the sake of warding off old troubles. (Dr. J. K. Spender, p. 78.)

Belladonna in Habitual Constipation.—No medicinal remedy is so valuable as belladonna in cases of habitual constipation. The dose should be from one-sixth to half a grain daily. It never purges, but produces natural evacuations not followed by constipation. (Dr. F. B. Nunneley, p. 265.)

Hemorrhoids.—*New Clamp.*—The clamps in present use do not press equally on all the parts to be removed. If, however, the joint screw is placed at right angles to the blades the action becomes perfectly parallel. By this plan of construction, moreover, a scooping action is at the same time secured, so that the deepest part of the pile is seized and drawn forwards. The shape of the scissors used has to be modified to suit them to the curve of the clamp. (Mr. S. Jones, p. 127.)

INTESTINAL WOUNDS.—*To Close.*—Cut two pieces of cork into the form of quadrangular prism, the length of the wound to be closed, and perforate each with pins so that they present the appearance of small combs. The heads of the pins should be driven well up to the cork and embedded in sealing-wax. These are then placed within the wound, *i. e.*, on the mucous surface of the bowel, one within either lip. The pins should now be made to penetrate the lips of the wound from within outwards, and then, the edges being inverted, the points of the respective rows of pins are made to face towards each other, and then the pieces of cork being forced together they are firmly locked by the pins. In the course of a few days the portion of tissue traversed by the pins detaches itself within the bowel, and the cork comes away by stool, leaving the wound firmly closed. (Dr. Béranger-Féraud, p. 126.)

OBSTRUCTION OF THE BOWELS.—*Hypodermic Injection of Morphia.*—In cases of obstruction of the bowels in which the symptoms are becoming urgent, with vomiting and severe pains, the hypodermic injection of morphia gives more chance of relief than any other plan of treatment. Not only the pain but the vomiting also will be relieved, and it will then be found that aperients will act. (Dr. J. Barclay, p. 258.)

STRANGULATED HERNIA.—*Caution as to the use of Morphia.*—In cases of strangulated hernia, accompanied with much abdominal pain and vomiting, great relief to the symptoms is given by subcutaneous injections of morphia. The pain and vomiting will perhaps cease, and you are liable to think that the strangulation is relieved, and an operation unnecessary. Yet the tumour will probably be found unaltered in condition, as proved by the absence of expulsive impulse on coughing, in fact, the symptoms have been masked, but the disease is as bad as ever, and serious changes are progressing in the strangulated bowel. (Mr. Maunder, p. 125.)

AFFECTIONS OF THE URINARY ORGANS.

ACUTE ORCHITIS.—The simplest, most satisfactory, and most efficient treatment of acute orchitis is by opium. After clearing out the bowels a grain of opium given twice a day will generally relieve all the tenderness and pain, and much of the swelling. (Mr. J. Rouse, p. 140.)

CATHETER.—*New form for retention in the Bladder.*—Catheters made of vulcanised india-rubber are quite unacted upon by the urine, and consequently can be worn habitually by patients in cases of prostatic or urethral disease. The difficulty is their retention in the bladder. This may be got over by the catheter having two little wings or fins of the same material placed just below the hole. These give way sufficiently to allow of the instrument being passed into or withdrawn from the bladder, but are quite sufficient to prevent its slipping out accidentally. All tapes and other means of fixing the instrument are thus done away with, and endless trouble avoided. (Mr. B. Holt, p. 137.)

New Retentive Catheter.—By a simple contrivance, vulcanised india-rubber catheters may be made retentive. A piece of string is passed through the catheter, and made to emerge through a clean hole an inch and a half from the point. The end is to be firmly attached to the point. After insertion it is only necessary to pull on the string to reduplicate the terminal portion. The free end of the string is to be fastened to a slot on the collar of the catheter. When it is wished to withdraw the catheter, its elasticity will cause it to assume its original form when the string is loosened from its attachment at the collar. (Mr. R. Davy, p. 140.)

DIABETES.—*Milk Diet.*—A purely milk diet in the treatment of diabetes is as superior to a purely animal diet as the latter is to a mixed one. The rapidity with which it acts is sometimes truly surprising, twenty-four hours being sufficient for the production of a marked improvement; the quantity and density of the urine suddenly fall, and the thirst and voracious appetite disappear, the skin becomes moist and perspiring, while the symptoms referable to the nervous system are rapidly relieved. (Dr. A. S. Donkin, p. 83.)

A purely milk diet offers hopes of cure in diabetes, or at least of great amelioration in the symptoms. In some cases after a period of two or three months there is complete disappearance of sugar in the urine, and then the diet may, if desired, be rendered more solid, by the detraction of some of the milk, and the addition of butcher's meat and green vegetables. (Dr. G. W. Balfour, p. 84.)

Opium in Diabetes.—Opium, morphia, and codeia, have a direct controlling power over the elimination of sugar in diabetes. There can be no doubt whatever about this, for it has been most carefully and accurately determined. Codeine has, however, a great advantage over opium and morphia, in that whilst it is equally efficacious in controlling the disease, it does not exert the same narcotic effect. When given in a dose of half a grain to begin with, and increased gradually to ten grains three times daily, nothing may be seen beyond its effect upon the disease. The pupils do not become contracted, nor is there any constipating action; the tongue remains clean, and the appetite unaffected. (Dr. F. W. Pavy, p. 86.)

ENLARGED PROSTATE.—*Removal of hard masses from the Prostate during Lithotomy.*—A great deal of the distress arising from stone in the bladder in elderly men, is owing to the existence at the same time of enlarged prostate. In some of these cases, as the forefinger passes towards the bladder through the incision made in the ordinary lateral operation, the sensation is perceived as if its point glided through several rounded bodies in the substance of the gland. These bodies are very loosely connected with the rest of the tissue, and are apt to slip between the blades of the forceps with which the stone is seized, and hinder its withdrawal. There is no reason, whatever, why one or more of these bodies should not be removed, either by enucleation with the finger, or by means of the lithotomy forceps. Such removal is not found in practice to do any harm, and is on the other hand likely to be of benefit by diminishing the size of the gland. (Sir W. Fergusson, p. 184.)

INCONTINENCE OF URINE IN CHILDREN.—*Collodion.*—This disease appears to be owing to want of power of contraction of the sphincter of the bladder. The bladder must be trained to retain its contents for longer periods at a time. Take the edge of the prepuce and draw upon it slightly, so as to raise up a portion into a little cup, and apply to this a little contractile collodion by means of the blunt end of a penholder. As it contracts it will draw firmly together the edges of the prepuce and seal them up effectually. When the child or youth desires to pass water, the little wedge of collodion is easily removed by the finger nail, and the application again made by the patient himself. It is found that the slight mechanical pressure thus produced, is quite sufficient to prevent the discharge of urine, and after a time the case is permanently cured. (Sir D. J. Corrigan, p. 143.)

LITHOTOMY IN THE INFANT.—*The Staff for.*—The groove should be on the convex surface of the instrument, so as to be at its full depth where the surgeon strikes for it, at the beginning of the membranous portion of the urethra. One side of the groove however should be a little lower than the other, so that when the instrument is introduced, the side next the left hand of the operator may be a little lower than the other, which condition should maintain to within three-quarters of an inch of the end of the instrument, when it should gradually come up to a level with the opposite side. This arrangement facilitates the lateralization of the knife to the required extent. Too much stress cannot be laid upon the necessity of freely opening the entire of the membranous portion of the urethra by the one and continuous stroke of the knife. (Dr. R. G. Butcher, p. 131.)

PERINEAL SECTION.—Unless the urethra is *really* laid open through the entire track of the strictured portion, nothing but disappointment will ensue in the end. The patient being placed in the lithotomy position, with the buttocks slightly raised, pass a curved staff of full size, grooved on its convexity, down to the stricture. The perineum must now be laid open centrally by a scalpel passed with its cutting edge upwards, directly to the apex of the prostate gland, for which purpose the left index finger in the rectum serves as the guide. The urethra should then be opened, not at the point of the staff but a quarter of an inch from it. The staff must now be withdrawn a little and turned round so that the point projects from the wound. It is then used simply to steady the urethra. Before the staff is altered in position, however, each lip of the urethral wound must be seized with artery forceps, and with these the canal drawn open. If the parts are now carefully sponged, the interior of the canal is so fully exposed to view, that with the aid of a fine probe-director the way may be completely cut through the stricture into the dilated part behind it. The whole thing is thus done by sight, and you are certain to have opened up not a new, but the old track, to the bladder. (Mr. C. G. Wheelhouse, p. 135.)

URINE.—*Effect of Lemon-Juice on the.*—It is quite a mistake to suppose that lemon-juice can make the urine alkaline. Neither lemon-juice, nor any other free vegetable acid or mineral acid, can cause the urine to become alkaline; although when there is an irritable stomach, the urine may frequently be found to be alkaline during digestion, even when mineral and vegetable acids are taken in large quantities. (Dr. H. B. Jones, p. 87.)

AMPUTATIONS, DISLOCATIONS, FRACTURES, ETC.

AMPUTATION.—*Wharton's Modification of Teale's Amputation.*—There are several objections to Teale's rectangular flap amputation, the principal of which is the high division of the bone. Wharton's modification avoids this. The measurements should be made and the flaps marked out exactly as in Teale's operation—but, instead of dissecting the bone, let it be sawn at the situation corresponding to the inferior termination of the posterior flap, and let the superior boundary of the anterior flap be limited by the same plan. The saving of bone thus effected will be considerable, and therefore tend directly to diminish the mortality of thigh amputations. According to this method the anterior flap will be shorter by a fourth, and there will be no posterior flap. (Mr. W. Stokes, p. 92.)

Amputation at the Hip-Joint.—The two things which have chiefly contributed to reduce the mortality from amputation at the hip-joint are, the use of chloroform, and compression of the aorta. Formerly the operation was hardly ever successful, owing either to shock from the operation or loss of blood during its performance. The best abdominal compressor is Lister's. The introduction of antiseptic surgery will reduce the mortality still further by lessening the drain on the system which takes place during the healing of so large a wound. (Mr. T. Annandale, p. 89.)

ANTISEPTIC SYSTEM.—*Comparative Effects of the Antiseptic System in the success of Amputation at a Hospital.* The antiseptic plan of treatment having now been adopted for three years at the Glasgow Infirmary, its effects upon the mortality from amputation can be judged of. Taking the major amputations only, before the antiseptic period there were 16 deaths in 25 cases or 1 death in every 2⅓ cases. During the antiseptic period there were 6 deaths in 40 cases; or 1 death in every 6⅔ cases. (Prof. Lister, Lancet, Jan. 8, 1870. p. 40.)

Antiseptic Ligature.—The material lately used by Mr. Lister for this purpose is silk steeped for a while in a mixture of melted beeswax with about a tenth part of carbolic acid. As the silk is taken out of the hot liquid it is drawn through a dry cloth to remove the superfluous wax; after which it may be wound on a reel and kept in any close vessel. (Prof. Lister, p. 95.)

Compound Dislocation of the Ankle.—Antiseptic Treatment.—In a case related by Prof. Lister, he, of course after reducing the dislocation, injected the joint with the strongest watery solution of carbolic acid which can be made—viz., one part of the crystals to twenty of water. This solution was then squeezed out, and the process repeated a second time. The external dressings were then applied as often recommended by Mr. Lister, and the leg put up on a splint. The lac plaster has been very much improved of late by being incorporated with soft cloth, instead of spread upon calico. It should be used in a double layer. Cases of compound dislocation of the ankle were generally fatal before the introduction of the antiseptic plan of treatment; now, however, a fatal result is the exception, and the patient usually gets well without any suppuration, and with but little constitutional disturbance. (Prof. Lister, p. 94.)

Sloughs in the Neighbourhood of Contused Wounds.—It is essential that every isolated slough which may exist in the neighbourhood of a contused wound should be dressed antiseptically like the wound itself. In order to secure this let the antiseptic plaster overlap the apparently uninjured skin far and wide in all directions. On the following day any dead portions of skin (recognised by their dusky discolouration) should be dressed with a piece of protective plaster covered by a piece of antiseptic lac plaster. Treated in this way they will be absorbed and reorganized into living tissue without any suppuration whatever. If the antiseptic lac is allowed to come into contact with the skin it will excite to "antiseptic suppuration" in the living parts surrounding the slough. (Prof. Lister, p. 103.)

Excision of the Knee-Joint.—When the cut surfaces of the bones have been placed in as complete apposition as possible, the limb should be bandaged along the whole length, except in the line of the wound, upon a splint placed behind and provided with a foot-piece. The edges of the wound should then be united with sutures, and long splints applied at the sides, with pads above and below the knee so as to defend the operated part from undue pressure, and permit discharge to escape if any suppuration takes place. The bandages must be moistened with blood, which sets and affords additional security. Great care must be taken to adjust the parts well and firmly in the first instance. If this plan is followed immediate union of the wound will often occur, and it will not be necessary to remove any of the bandages until bony union has occurred. (Dr. G. M. Humphry, p. 268.)

Transverse Fracture of the Patella.—The reason of the difficulty in keeping up accurate coaptation of the broken parts is not contraction of the quadriceps extensor, but fluid pressure from within. The damaged muscle, so far from being contracted, is in a remarkable state of physiological inactivity, and sometimes it becomes permanently and completely atrophied. (Mr. J. Hutchinson, p. 109.)

Whisky as an Antiseptic Dressing.—Alcohol is an excellent antiseptic dressing for wounds. Having removed foreign substances or clotted blood, wash thoroughly with strong whisky, and close with stitches if necessary. Then cover with a rag and bandage, both saturated with whisky; and finally all is enveloped in gutta-percha tissue or oiled silk, and directions given to the attendants to wet the bandage from time to time with the spirit. (Dr. D. Blair, p. 107.)

AFFECTIONS OF THE SKIN, ETC.

Alopecia Areata.—This disease is not owing to the growth of a parasitic fungus at all. The Microsporon Audouini is a myth. A temporary malnutrition of the roots of the hairs suffices to explain everything. The continuous cell-proliferation at the root ceases, the hair does not advance, atrophies, and drops off. It will be noticed that there is usually a thinning of the hair over the whole scalp. (Prof. Rindfleish, p. 158.)

Carbuncle.—*Carbolic Acid.*—The idea has lately been started that boils and carbuncles are parasitic in their origin. This idea is borne out by the success attending their treatment with carbolic acid. Cryptogamic vegetation resembling that of sycosis has, in one or two cases, been actually found; but whether this is constantly present or not has not yet been determined. After making a free crucial incision the tumour should be covered with lint soaked in oil containing one part to five of carbolic acid, and strips of the same should be laid in the fossæ formed by the divisions of the diseased mass, and afterwards inserted into all the natural openings which may form in it. The oil and acid should be renewed every few hours. (Dr. P. Eade, p. 155.)

Prurigo.—Prurigo, as well as other lesions of the skin, such as erythema and herpes, sometimes is dependent upon a morbid state of nerve function. Such cases are not amenable to local remedies, and arsenic not uncommonly disagrees and is altogether unsuitable to the case. There may be intense pruritus uncomplicated with any marked affection of the skin visible to the eye, or with only slight herpes or erythema, but attended by nervous debility, neuralgic pains, and general low tone of system. Quinine, in ten-grain doses daily, is more likely to be of service here than any other plan of treatment. If accompanied by pruritus vulvæ or ani, juniper tar soap should be used for purposes of ablution, and then oxide of zinc ointment applied. If the pruritus is worst at night, as is usually the case, the quinine should be taken at bedtime in a glass of sherry. (Mr. E. Wilson, p. 153.)

Prurigo Senilis.—This disease has no connection with phtheriasis corporis, the disease due to the presence of lice. Let the patient wear a complete underdress of vulcanised india-rubber cloth. This same plan is also of use in case of prurigo and ichthyosis, and probably in most obstinate localised eruptions. (Dr. McCall Anderson, p. 146.)

Psoriasis.—*Carbolic Acid.*—Carbolic acid is a valuable local application in cases of psoriasis. One part by weight of the acid to four of common lard should be melted down and mixed, and afterwards allowed to cool. This ointment ought to be applied every night, and covered with gutta-percha tissue to prevent evaporation. The dressing should be continued until the scales begin to disappear and the skin assumes a healthier aspect, when the oxide of zinc ointment may be substituted for it. (Dr. J. M'Nab, p. 156.)

Sea-Air in Skin Diseases.—Sea-air and sea-water are very apt to prove prejudicial to the subjects of skin affections, with the exception, perhaps, of those labouring under strumous diseases. (Dr. McCall Anderson, p. 147.)

Tinea.—In all the tineæ, although active treatment is required for the destruction of the parasite, we must not forget that parasites do not grow except upon soils suitable for them. There is always tardy assimilation, and want of fatty matter in the system. Cod-liver oil or fatty foods are required, with all measures calculated to improve the general health, and in adults, freedom from worry and care. (Dr. T. Fox, p. 149.)

Urticaria Perstans.—In nettle-rash, recurring from day to day and from week to week, when it is independent of local causes, and when no constitutional derangement is present, sedatives are sometimes curative, especially bromide of potassium in full doses. (Dr. McCall Anderson, p. 149.)

VENEREAL AFFECTIONS.

Gonorrhœa.—*New Injection Syringe.*—Mr. Durham, of Guy's Hospital, recommends the treatment of gonorrhœa by means of a new form of syringe, which will be understood at once by reference to the woodcut at p. 188. It is like the ordinary india-rubber barrel syringes in appearance, but smaller, and modified for the purpose intended. The nozzle intended for introduction into the urethra is three and a half inches in length, and terminates in an olive-shaped bulb. The injection escapes at the base of this bulb, and is forced out in a backward direction. The bulb prevents its passing further up the urethral canal. The patient must always pass water before the syringe is used, and a little tepid water should be injected first, in order to thoroughly wash out the passage. The frequent use of a weak injection answers better than the seldom use of a stronger one. (Mr. A. E. Durham, p. 186.)

Syphilis and Chancre.—Every sore is not syphilitic. There is a large proportion which are merely chancres, not productive of any subsequent constitutional disorder whether mercury is given or not (which it ought not to be).

On the first appearance of a sore we cannot positively determine whether it is true syphilis (hard chancre) or not (soft chancre). This, however, is of the less moment that the poison is absorbed into the system the moment of connection if it be true syphilis, and no treatment of the sore can ward off its effects. The best plan, and the only safe one, is, to invariably destroy the surface of a sore, no matter of what kind, with strong nitric acid, and then to rub nitrate of silver upon the destroyed surface. The nitrate generally relieves the pain caused by the acid. Should the sore, however, not be seen for some weeks, and there is induration of the sore and enlargement of the glands in the groin, it is not worth while applying the acid, and small doses of mercury should be given at once, or deferred until an eruption occurs, if there is the slightest doubt as to the real nature of the sore. (Mr. J. C. Forster, p. 178.)

Syphilitic Ecthyma and Rupia.—There is no doubt that in some cases patients are much benefited by a careful administration of mercury. If we find the patient cachectic and ill, and the sores increasing in number and size in spite of good feeding, it is better to give mercury at once. As a rule, however, it is perhaps wiser to try previously iodide of potassium, in doses of ten grains to two scruples, three or four times a day. Whenever patients are the subjects of the "gummy products" of syphilis, or of the so-called "cancer of the face"—a part of the body this tertiary form of the disease seems particularly to like—they are most quickly cured by the use of this drug; and if they are not quickly treated with it, the most frightful deformity is left. (Mr. J. C. Forster, p. 188.)

AFFECTIONS OF THE EYE.

Flexible Lachrymal Probes.—Bowman's probes, if not bent so as to correspond with the exact direction of the duct in the individual operated upon, are liable to lacerate the mucous membrane of the passages. Flexible probes made of alloyed silver, having bulbous extremities, are more suitable and adapt themselves to the sinuosities of the passages. (Dr. Williams, p. 161.)

Leaden Styles for Lachrymal Obstructions.—The ordinarily used silver styles do not adapt themselves accurately to the lachrymal canal, but press unduly upon several points and not at all upon others. Hence the case is much prolonged, the passage having to become adapted to the unyielding style before much good is effected. Styles made of the purest and softest lead drawn into wire are far more suitable, more rapidly cure the case and with less distress to the patient. (Dr. J. Green, p. 161.)

Granular Lids.—*Simple Syrup as a Collyrium.*—The most successful treatment for ordinary cases of granular lids is that which acts by mechanical lubrication. Simple syrup, combined in some cases with other remedies, such as vinum opii or atropia, answers admirably. About three drachms of the best sugar to the ounce of water, filtered quite clear, forms a solution which does not deposit sugar. A little may be dropped into the eyes as often as they feel uneasy. (Mr. L. Tait, p. 177.)

Ophthalmoscope.—*Dr. Lionel Beale's Self-illuminating Ophthalmoscope.*—This consists of a brass telescope tube containing a reflector near the eyepiece, and a small paraffin lamp placed laterally so as to throw its light upon the reflector. This arrangement much facilitates ophthalmoscopic examinations, in many cases renders the use of atropine unnecessary, and obviates the necessity for a darkened room. The instrument is remarkably easy to use, even those who have had no experience succeed almost upon the first trial. (Dr. L. Beale, p. 159.)

Pannus.—*Inoculation.*—If inoculation by gonorrhœal matter is used in all cases of pannus which you cannot otherwise cure, a certain proportion of your cases will prove disastrous, and irretrievable mischief ensue. Only those cases should be thus treated in which *the whole* cornea is vascular. It is the presence of a little bit of clear cornea which is to be feared, and when that is present inoculation is inadmissible. (Mr. L. Tait, p. 177.)

Senile Cataract.—It is never advisable in senile cataract to operate upon both eyes at the same time, and not at all if the sight of one eye remains good. It is also necessary to be sure that the cataract is quite mature, otherwise in extraction a portion of the hard surface matter may separate from the harder central part and remain behind the iris or in the pupil. (Mr. J. S. Wells, p. 165.)

Strabismus.—*Should one or both Eyes be operated on?*—By a properly performed tenotomy we are able to cure a divergence of 2 to 2½ lines, not more. If, therefore, the divergence is greater than that, a double operation is necessary. If the divergence is less than 2½ lines we must apply a conjunctival suture so as to somewhat approximate the divided ends of the tendon. When both eyes are operated on it should not be at one sitting, but the second four or five days after the first, in order that the effect of the first operation may be properly estimated. (Mr. J. S. Wells, p. 174.)

MIDWIFERY, ETC.

Anointing in Infantile Disorders.—Anointing the skin of the body with salad oil in infantile disorders is a remedy of more value and of more general application than is usually thought. It acts as a fuel-food, not only preventing waste of tissue, but actually increasing the bulk of the little patient. In atrophy, bronchitis, convulsions, diarrhœa, and febrile disturbances generally, it is of use. Some very interesting cases are given illustrative of its employment in these diseases. (Dr. H. G. Knaggs, p. 229.)

Chronic Inversion of the Uterus.—If we cannot restore a uterus chronically inverted, by the hand, our next plan is to employ elastic pressure, and even if this does not succeed ablation must not be resorted to until the following operation has been tried. A shallow incision should be made on either side of the os uteri, say a third of an inch deep and two thirds long. To accomplish this the uterus must be drawn down outside the vulva, by means of a sling of tape passed round its body. This having been done the elastic pressure must be reapplied. After the incisions have been made the uterus can be restored by pressure with the hand, but this is liable to cause the tissues of the organ to tear a little at the points of incision. (Dr. R. Barnes, p. 217.)

Ergot.—No preparation of ergot in which a single solvent is used can be a complete representative of the soluble portions of the drug. The ergot should first be exhausted with ether and alcohol, and the residuum with hot water. If the ethereal solution and the aqueous infusion are now strongly agitated together with crystallised sugar they will mix and form a homogeneous syrup. This syrup is very certain in its action. (Dr. C. Ronayne, p. 199.)

Ergot excites contraction of the non-striated muscles generally, including those of the vascular system. Hence its use in hæmoptysis from cardiac or pulmonary disease, in albuminuria and menorrhagia. Its action is increased by certain combinations, particularly with digitalis in heart diseases. (Dr. C. Ronayne, p. 199.)

Midwifery Forceps.—*A New Form of Short Forceps.*—The ordinary short midwifery forceps are by no means everything that can be desired in the slighter cases of disproportion, and in those numerous cases of retarded labour from exhaustion or constitutional debility. For this class of cases a light and portable form of forceps has been invented by Dr. J. Braithwaite, of Leeds, in appearance somewhat like a single blade. This is introduced directly into the hollow of the sacrum, then separated into the two blades of which it really consists, and these are glided one upwards and the other downwards so as to embrace the head. They can be introduced without the knowledge of the patient, and without touching the external parts of the mother or disturbing her position on the bed. In the severer class of cases they can be applied in the usual way. (p. 191.)

Ovariocentesis Vaginalis.—The operation of tapping an ovarian cyst *from the vagina*, and afterwards adopting means to cause atrophy and obliteration of the cyst, has been performed now in 55 published cases, with an encouraging amount of success. It is only applicable when the fluctuation can be distinctly felt in the vagina, and when that passage is not of unusually small size. Although multilocular cysts may be treated in this way, it is more applicable to unilocular ones. The tumour being well pressed down into the pelvis is to be punctured with a long curved trocar. The stilet is then withdrawn, and a knife, having a blade projecting an inch and an half beyond the canula and fixed on a handle suited to the curve of it, is passed. The canula and knife are now withdrawn, and at the same time the opening is enlarged so as to admit of the introduction of the finger. An elastic tube about as thick as a finger, is then introduced and bound external to the genitals. The after treatment is of vital importance, and consists of the use of disinfectant injections and scrupulous cleanliness. (Dr. E. Noeggerath, p. 205.)

Ovariotomy.—*Effect of Tapping upon a subsequent Ovariotomy.*—A careful study of three hundred cases of ovariotomy, conclusively shows that the mortality from that operation is but little affected by previous tappings—that the fact of a patient not having been tapped, or having been tapped very often, is by itself of little or no value in prognosis. The reason is that such adhesions as are apt to follow tapping, have no appreciable effect upon the success of the operation, and there are often no adhesions at all in patients who have been tapped the most frequently. Tapping one or more times is often a useful prelude to ovariotomy, either as a means of gaining time for a patient's general health to recover, or by lessening shock, by removing fluid a few days or hours before removal of the solid tumour. (Mr. T. S. Wells, p. 209.)

Parturition.—*New mechanical appliance as an aid to.*—It is the want of power in the abdominal muscles which makes the labour of a woman in civilised life so much more difficult than that of a savage. The author has invented an instrument, which to some extent supplements the power of the abdominal muscles. It consists of a sacral and a pubic pad, retained in their places by lateral springs, which embrace the pelvis below the crista ilii, a fixed point having been thus gained. Attached to the sacral pad are two vertical levers, and one horizontal, the former (vertical springs) end each in a costal spring, embracing the thorax, and united by a sternal pad, so arranged as not to incommode the chest in respiration; the latter, or horizontal, is a powerful spring buckled to a belt closely adjusted to the abdominal walls, and connected above to the costal springs and below to the pelvic band by elastic rings. It is thus constructed, so as to act in the manner of the abdominal muscles. During the parturient pains, this belt is readily tightened at will, to assist or supply the place of the voluntary muscular contractions, and is as readily relaxed in the intervals of pain. When required, it may be made to maintain a steady uniform pressure, as is often needed *post partum*. This force, reacting upon the sacral pad, affords to the patient that support in the lumbar region which is so much called for during labour, and which is usually supplied by the hands of the nurse. (Dr. P. Smith, p. 202.)

Pelvic Cellulitis.—In the majority of these cases the inflammation is one of the serous membrane alone, whilst in some, the inflammation is extra-peritoneal. There are two distinct affections—not always possible to diagnose from each other, but generally so. In pelvic cellulitis the uterus is usually pushed to the opposite side of the pelvis from that occupied by the phlegmon, whereas in some cases of peritonitis the body and fundus of the wound are so completely lost amidst the general exudation that their exact position cannot be determined. In the treatment of these cases removal of blood by leeches applied round the anus is quite as effectual as the application of leeches to the uterus itself, and not open to the objections to which that plan is. Opium and morphia suppositories and the subcutaneous injection of morphia are generally called for. From mercury no benefit is likely to accrue. (Dr. L. Aitken, p. 222.)

Pessary.—*Improved Elastic Pessary.*—The objection to the ordinary elastic pessary is its great size for introduction and removal, and the annoyance caused by the tube attached to the pessary for the purpose of inflation. To obviate these things the author has invented a pessary which can be introduced and withdrawn in a collapsed state, and inflated easily on introduction. It is made by Salt, of Birmingham. (Mr. J. Clay, p. 213.)

Polypus Uteri.—Never induce anæsthesia for the removal of a polypus uteri. If the ligature be tightened round a polypus it gives no pain; if it be tightened round a portion of uterus the pain produced gives warning, and the opportunity of retrieving error. (Dr. R. Barnes, p. 218.)

Post-Partum Hemorrhage.—But few cases of post-partum hemorrhage would occur if a full dose of ergot were given immediately after the birth of the child. It would be a vast improvement in obstetrics if the forceps could be substituted for ergot, as now often given during labour; and if the ergot were given habitually at the moment of birth. By this plan subinvolution of the uterus would become less frequent. (Dr. Tyler Smith, p. 202.)

Injection of the Uterine Cavity with Perchloride of Iron.—There certainly are cases of post-partum hemorrhage which neither pressure upon the uterus, cold, nor ergot of rye will arrest. These remedies must not be persisted in until collapse sets in. The uterus should at once be injected with perchloride of iron. Dr. Barnes carries about with him for this purpose a case containing a Higginson's syringe and a bottle of perchloride of iron. (Dr. R. Barnes, p. 201.)

Pruritus of Pregnancy.—*Its Cure by Smoking.*—A case of severe pruritus from pregnancy is related in one of the French journals, in which no remedy gave any relief until, by the advice of her husband, the patient smoked tobacco. She found immediate relief, and took one cigar every evening during the continuance of pregnancy, with the effect of completely preventing another accession of the complaint. (p. 200.)

Rectum.—*Eversion in Women for Purposes of Examination.*—In men some form of speculum is always necessary for examining the rectum, but in women there is a far more effectual method. Pass the finger into the vagina and press it backwards and downwards over the levator ani, the rectum can be everted through its sphincter like a glove. This can ordinarily be done to a very great degree; it can always be done to a very great extent. Should the sphincter be unusually irritable or spasmodically contracted, it can be forcibly distended by the thumbs and temporarily ruptured. The whole of the mucous membrane can by this plan be minutely inspected, and the treatment necessary be more effectually applied. (Prof. H. R. Storer, p. 224.)

Rigid Os.—*Hydrochlorate of Apomorphia.*—Apomorphia, one of the alkaloids obtained from opium, possesses powerful emetic properties. A case of extremely rigid and unyielding os uteri is related, in which $\frac{1}{4}$ grain of the hydrochlorate of apomorphia caused immediate relaxation of the parts. The effect was so rapid and perfect that the child was expelled with ease, although labour had previously lingered on for many hours. It might be used by subcutaneous injection. (Dr. Milne, p. 213.)

Sickness and Diarrhœa of Children.—When the motions are frequent and slimy, and also when they are of a grass-green colour, a drop of ipecacuanha wine given every hour, or less frequently, according to the severity of the symptoms, will generally prove a very successful treatment. The presence of sickness may be accepted as a special indication of its usefulness. (Mr. C. C. Fuller, p. 231.)

Tumours of the Breast.—*Bromide of Potassium Externally.*—In cases of painful tumour of the breast, probably cancerous, apply the following lotion by means of a piece of flannel saturated in it and covered with oil-silk: one ounce of acetic acid (B. P.), two drachms of bromide of potassium, and five ounces of water. It will relieve the pain, and even produce lessening in the size of the tumour. (Dr. H. Osborn, p. 229.)

Version after Failure of the Forceps.—If it is found impossible to deliver a child by the forceps, there are some cases in which version is far preferable to craniotomy. If, however, there is considerable doubt as to whether the forceps will fail, version should always be preferred as the primary operation, provided the state of the uterus is favourable, and chloroform can be given. (Dr. J. B. Hicks, p. 193.)

MISCELLANEA.

Alcohol.—*Its Action on the System.*—The true character of the alcohols is that they are agreeable temporary shrouds. There is no evidence at any stage of their action that there is increase of power in the organism. The overwhelming fact of reduction of temperature following their use, quite puts out of the question any chemical consumption of them within the body to any amount. If, under scientific administration alcohol is found to cure fever, it can only act by lowering temperature and checking waste, not by sustaining as food sustains the body. (Dr. B. W. Richardson, Medical Times and Gazette, Dec. 18, 1869, p. 706.)

Apomorphia as an Emetic.—Apomorphia is obtained by digesting morphia in concentrated hydrochloric acid, at a high temperature for several hours. It differs chemically from morphia in containing an equivalent less of hydrogen and oxygen, or the elements of water. It is the most speedy and certain emetic known, and its action is not accompanied or followed by any baneful effects. The tenth of a grain of the hydrochlorate of apomorphia, or even less, is the dose required. It may be given with safety to children, and it acts more rapidly when hypodermically administered. (Dr. F. M. Pierce, p. 260.)

Bichloride of Methylene.—Bichloride of methylene is not all that can be desired as an anæsthetic. It is certainly marvellously rapid in its action, and it answers the end in view, but it belongs to a dangerous family of chemical substances, and cannot be played with without risk. It is certainly safer than chloroform, inasmuch as it contains an equivalent of chlorine less. But the safety is relative, not absolute. (Dr. B. W. Richardson, p. 253.)

Chloral.—Hydrate of chloral is by no means an anæsthetic. As a producer of sleep it is, however, in many respects, unrivalled, even by opium. The sleep produced is light and refreshing, provided it is given in moderate doses. It is unnecessary and dangerous to give above twenty or thirty grains at a dose. A dose of fifty grains has been known to produce very serious symptoms. It generally fails to relieve severe pains of a purely neuralgic character, but there is a good deal of evidence to prove that it relieves suffering where the affected parts are tense, and mere arterial throbbing counts for much in the production of the pain; thus it has been very favourably spoken of for its effects in gout. It seems likely that in delirium tremens, with the choice of two such weapons as bromide of potassium and chloral, we shall be able almost entirely to dispense with the use of opium. In the sleeplessness which precedes puerperal mania, chloral is probably an unequalled remedy. In melancholia its action appears to be powerful and remarkably sure. (Editor of Lancet, p. 232.)

There are no special contraindications to the employment of chloral when used for somniferous purposes. Even in head and chest affections, in which opium is inadmissible, chloral may be used with perfect success. It is a most valuable anodyne in cases of neuralgia, hysteralgia, dysmenorrhœa, pleurodynia, &c., and in the pains attendant on cancer and acute local inflammations. In cases of chorea, and threatened or incipient insanity, I have exhibited it with benefit. In continued fevers it will procure sleep and reduce the pulse, and it may be given with benefit in acute mania, delirium tremens, and asthma. (Sir J. Y. Simpson, p. 233.)

Chloral sleep is much more natural than that produced by opium. In both, as in natural sleep, the pupil is contracted to the utmost, but in chloral sleep the pupil immediately dilates on awaking, just as it does in natural sleep. This is not the case with opium sleep. Again, the chloral sleep is more natural in this respect—that the sleeper may be aroused at any time, and at once recover the full use of his functions. (Dr. J. B. Russell, p. 242.)

Chloral will almost instantly produce sleep where the brain is functionally or organically disturbed, but acts with great uncertainty upon a sound brain where pain is the exciting cause of sleeplessness. (Mr. A. M. Adams, p. 238.)

The action of chloral is somewhat uncertain, and for a first dose not more than twenty grains should be given. A larger dose may produce too prolonged sleep, and cause alarm to the patient's friends. In the case of persons accustomed to a good deal of alcohol, larger doses are generally required to produce the same effect as on persons of temperate habits. (Dr. H. Maund, p. 235.)

Chloral is a valuable adjuvant to chloroform and opium—for instance, a less dose of morphia is required if a little chloral is administered at the same time; and when a patient is under the influence of chloral a few drops of chloroform produce complete anæsthesia, whereas without it a considerable quantity might be required. This latter fact is likely to be of great importance in surgical and obstetric practice. (Mr. L. Tait, p. 236.)

Strychnia an Antidote to Chloral.—Strychnia administered after a too heavy dose of chloral, shortens and destroys the effect of this substance, yet without producing the injurious action which it exhibits in ordinary cases. The strychnia should be given hypodermically. (Dr. Liebreich, p. 235.)

If two rabbits are injected with strychnia, but one of them previously with chloral, the animal injected with strychnia alone speedily dies from tetanus, whilst the other shows no appearance of spasm and is speedily well. Of course, the doses must be proportioned to each other, and it is necessary that the chloral should be administered first, as it is absorbed more slowly than the strychnia. (Dr. Liebreich, p. 236.)

CHLOROFORM.—*Prevention of Death from.*—If an animal be placed in an atmosphere highly charged with chloroform, its respiration will be observed to become fainter and fainter, and finally to cease. If the chest is opened the lungs are found collapsed and bloodless, but the heart is still acting. Hence we infer that the one thing required in the human subject, when death is threatened from chloroform inhalation, is artificial respiration. This respiration ought to be of the gentlest kind; there ought to be no rough movements or manipulations of the chest, which can only tend to further paralyse the enfeebled action of the heart. Long ago Dr. Snow advised that inflation should be effected from mouth to mouth. The little india-rubber bellows invented by Dr. Richardson (described in this volume) promises, however, to be a most efficient instrument for the purpose. It can be procured for ten shillings, and can be worked by one hand. (Editor of Lancet, p. 244.)

Influence of Chloroform in Promoting Cutaneous Absorption.—Chloroform, or, better still, chloroform diluted with two or three parts of alcohol, has a wonderful power when holding in solution some medicinal substances, as aconitine or atropine, of causing rapid absorption by the skin of that substance when applied in contact with it. Tincture of aconite applied alone upon the skin will not produce any appreciable effect, but mixed with an equal quantity of chloroform the skin will become pale and insensible to the prick of a pin; in fact, superficially paralysed. This does not occur if the chloroform is used alone, at least nothing to the same extent. (Dr. A. Waller, p. 246.)

ELECTRICITY.—*To Charge a Patient with Electricity.*—Place the patient upon a glass-legged stool, and connect him by a brass chain with a powerful frictional electric machine. He may now be thoroughly charged with electricity, without any unpleasant sensation to himself beyond a feeling as if his hair were "standing on end." If he is touched with the knuckle anywhere a spark will be drawn from that part. It is astonishing what this will do in certain cases. It will sometimes remove in a few seconds a tic that has lasted for days. Pain in the sciatic nerve, many odd and disagreeable sensations, unpleasant flutterings about the heart, depending on weak innervation, and tremor of the limbs, may all be removed by simply "charging the patient." (Dr. J. R. Reynolds, Lancet, March 5, 1870, p. 331.)

ETHER AS A STIMULANT-SEDATIVE.—Sir Frederick Pollock, who has now attained the advanced age of eighty-six, has communicated, through Sir James Alderson, his experience of the benefits to the aged resulting from the inhalation of the best rectified ether. Sir F., besides a certain amount of indefinable nervous malaise, suffered specifically from gastric flatulence and painful spasm, occurring almost constantly during meals. He inhaled the ether from an ordinary bottle applied to one nostril, and soon found that a few strong whiffs taken in this manner were sufficient at once to quiet spasm and pain, and to induce a general tranquillity of the nervous system. He did not find consciousness disturbed, but the intellect tranquillized and fortified. It is probable that ether inhaled in small quantities may prove a better stimulant wherewith to soothe the nervous system of the aged, than either alcohol, tobacco, or opium. (p. 266.)

GLYCERATE OF TAR.—Glycerine is an excellent solvent of the medicinal properties of tar, and serves as a valuable adjunct to the latter therapeutically. Each fluid ounce of the glycerate should represent thirty grains of tar. A formula for its preparation is given. (Mr. J. B. Moore, p. 158.)

METHYL-ETHYLIC ETHER.—This is a new anæsthetic introduced by Dr. Richardson. It is a gas, produced by mixing one part of sulphuric acid with two of pure methylic alcohol, and applying heat. It is fixed by absorption by pure ethylic ether. Two drachms of this ethylic ether saturated with methylic is sufficient for anæsthesia. The action of this anæsthetic is very rapid, and there is never spasm, syncope, or asphyxia during inhalation, or any after nausea. The chief peculiarity of its action is that in all cases there is a semi-consciousness, so that the patients do what they are told to do, remember what has been done, but still are not conscious of pain. This ether produces no excitation of the nervous centres which supply the vascular system, as chloroform does, and consequently there is absence of muscular spasm, of contraction of bloodvessels, and of syncope from fatal contraction of the heart. For short operations this anæsthetic will probably be peculiarly valuable. (Dr. B. W. Richardson, p. 253.)

MORPHIA.—*Dose of Morphia for Subcutaneous Injection.*—A quarter of a grain of morphia is as a rule an unsafe dose to commence with. A third of a grain has caused dangerous symptoms in fifteen minutes, and in a case of mania half a grain has proved fatal. (Dr. E. T. Wilson, p. 256.)

NEW SUBCUTANEOUS INJECTION SYRINGE.—M. Dieulafoy has brought before the Imperial Academy of Medicine at Paris a modification of the subcutaneous injection syringe, by which its uses are immensely extended, especially for the purpose of evacuating deep-seated abscesses. The needle can be shut off from the syringe by a stop-cock, and there is also a short projecting tube at the needle end of the piston and at right angles to it, also closeable by a stop-cock. By alternately opening and closing these cocks a deep-seated abscess, or one situated in a joint, may be completely evacuated, or the air drawn off from a strangulated hernia. Pleuritic or even pericardial effusions might in a similar manner be removed. The needles used are so delicate that they can be introduced into many internal parts without injury. (p. 267.)

NITROUS OXIDE GAS AS AN ANÆSTHETIC.—There appears to be no reason why nitrous oxide gas should not be extensively used in general surgery as an anæsthetic, and many important reasons why it might be so used. The first of these is its safety, secondly, the rapidity with which anæsthesia can be produced, thirdly, the anæsthesia can be prolonged as long as wished, and when the anæsthetic is withdrawn, its effects pass off very rapidly, and there is no after discomfort of any kind. There is no difficulty whatever in maintaining anæsthesia as long as desired. (Mr. C. J. Fox, p. 249.)

Nitrous oxide gas is of necessity a bad agent for anæsthetic administration. All atmospheric air is excluded during inhalation, and if inhalation is continued beyond a given period, even for a few seconds, it must of necessity produce fatal results. (Dr. B. W. Richardson, p. 253.)

POISONING BY TINCTURE OF ACONITE.—The plan of injecting liquor ammonia into the veins, found so successful in cases of snake-bite, appears likely to be of service in cases of poisoning by other substances. An interesting case of poisoning by aconite is related, in which the successful termination appeared to be materially assisted by this treatment. (Mr. B. W. Richardson, p. 262.)

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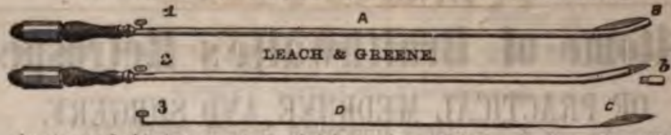

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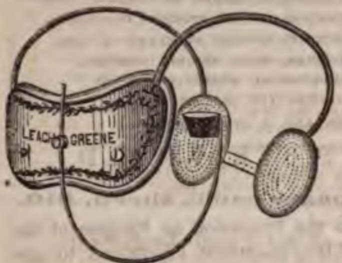

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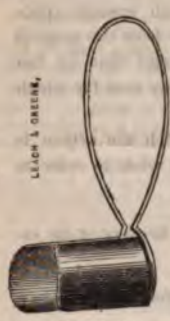

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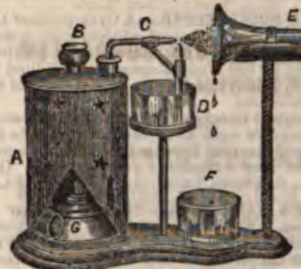

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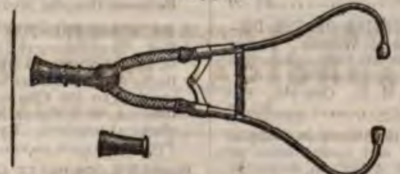

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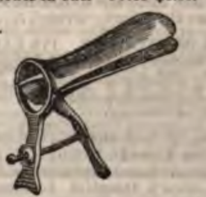

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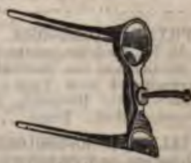

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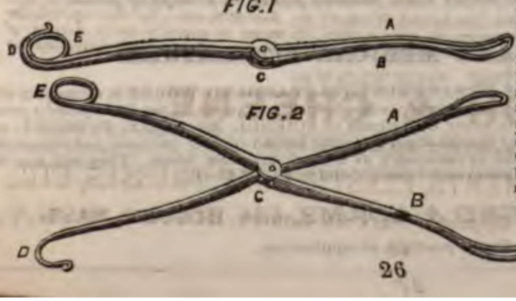

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